The Open Court

A MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea

Editor: Dr. Paul Carus.
Assistant Editor: T. J. McCormack.

Associates: E. C. Hegeler. Mary Carus.

VOL. XVII. (no. 3) March, 1903. NO. 562

CONTENTS:

Frontispiece. Friedrich Delitzsch, German Assyriologist.

The Struggle for Babel and Bible. Introductory.—Eduard Koenig.—A Prominent Theologian's View.—M. Halévy's Opinion.—A Roman Catholic Verdict.—Cornill on "Babel and Bible."—The German Emperor in His New Rôle as a Theologian.—The Emperor William's Letter. Thomas J. McCormack 129

The Emperor's Orthodoxy. Editor 146

The Caaba. Illustrated. Editor 151

Critique of the Concept of Temperature. (Concluded.) Dr. Ernst Mach, University of Vienna 154

John Wesley Powell. A Biography. IV. The Explorer. (Illustrated.) Mrs. M. D. Lincoln (Bessie Beech), Washington, D. C. . . . 162

The French Colonies in China. C. Pfoundes 175

New Books on Shakespeare 176

A Pompeiian Mosaic. Carl Michelsen 180

Mr. Michelsen's Pompeiian Mosaic. Editorial Comments 184

From the Adi Granth. A Poem. E. Martinengo-Cesaresco 185

Articles on the Origin of Christianity 187

Book Reviews and Notes 188

CHICAGO

The Open Court Publishing Company

LONDON: Kegan Paul, Trench, Trübner & Co., Ltd.

Per copy, 10 cents (sixpence). Yearly, $1.00 (in the U. P. U., 5s. 6d.).

 Entered at the Chicago Post Office as Second-Class Matter.

The Open Court

A MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea

Editor: Dr. Paul Carus.
Assistant Editor: T. J. McCormack.

Associates: E. C. Hegeler. Mary Carus.

VOL. XVII. (no. 3) March, 1903. NO. 562

CONTENTS:

Frontispiece. Friedrich Delitzsch, German Assyriologist.

The Struggle for Babel and Bible. Introductory.—Eduard Koenig.—A Prominent Theologian's View.—M. Halévy's Opinion.—A Roman Catholic Verdict.—Cornill on "Babel and Bible."—The German Emperor in His New Rôle as a Theologian.—The Emperor William's Letter. Thomas J. McCormack 129

The Emperor's Orthodoxy. Editor 146

The Caaba. Illustrated. Editor 151

Critique of the Concept of Temperature. (Concluded.) Dr. Ernst Mach, University of Vienna 154

John Wesley Powell. A Biography. IV. The Explorer. (Illustrated.) Mrs. M. D. Lincoln (Bessie Beech), Washington, D. C. . . . 162

The French Colonies in China. C. Pfoundes 175

New Books on Shakespeare 176

A Pompeiian Mosaic. Carl Michelsen 180

Mr. Michelsen's Pompeiian Mosaic. Editorial Comments 184

From the Adi Granth. A Poem. E. Martinengo-Cesaresco 185

Articles on the Origin of Christianity 187

Book Reviews and Notes 188

CHICAGO

The Open Court Publishing Company

LONDON: Kegan Paul, Trench, Trübner & Co., Ltd.

Per copy, 10 cents (sixpence). Yearly, $1.00 (in the U. P. U., 5s. 6d.).

 Entered at the Chicago Post Office as Second-Class Matter.

DR. FRIEDRICH DELITZSCH.

German Assyriologist.

Frontispiece to The Open Court.

THE OPEN COURT

A MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea.

VOL. XVII. (NO. 3.) MARCH, 1903. NO. 562

THE STRUGGLE FOR BABEL AND BIBLE.

BY THOMAS J. McCORMACK.

CORDIAL as the reception extended by the American public to Delitzsch's book *Babel and Bible* has been, it is only remotely comparable to the favor bestowed upon it by the reading public of Germany. Edition after edition of the book has been issued; every month polemical tracts have appeared in confutation of it,[1] and now the climax has been reached by the publication of a letter by the German Emperor himself, expressly denying his supposed acquiescence in Delitzsch's views, attacking the critical attitude of Assyriologists generally toward purely religious doctrines, and saying, for his government and the Oriental Society, "we carry on excavations and publish the results in behalf of science and history, but not to confirm or attack religious hypotheses with Professor Delitzsch, the theologian, who has run away with the historian."

This letter, which was written after long and earnest solicitation "in order to restore the confidence of the clergy and laity," is "the sensation of the hour" in Germany, and the cable report of its appearance just reaches us as we go to press. We shall quote the Emperor's views in full at the end of the present article.

INTRODUCTORY.

Delitzsch's *Babel and Bible* was originally a lecture on the significance of Assyriological research for our knowledge of the Old Testament; it was twice delivered before the German emperor, then published in pamphlet form, and subsequently translated into English, appearing first in *The Open Court* and afterwards separately as

[1] The most pretentious of these, a book by Prof. Eduard König of Bonn, with the counter-title *Bible and Babel*, reached in last December its sixth edition.

a book.[1] If we except reprints of strictures made in Germany, there was little adverse criticism of the book. The American and English press generally welcomed it as "giving exactly what was wanted." But not so in Germany. While the daily press was almost fulsome in its praise, the theological showed unmistakable signs of irritation,—nay, even grew lachrymose in its expressions of pain and regret at Delitzsch's deliverances. It was only too apparent from their attitude that the theologians were vividly conscious of the fact that, in thus presenting in popular form the splendid results of Assyriological research, Dr. Delitzsch had, so to speak, let the Old Testament cat out of the bag. Not that substantially the same material had not been published before in more ponderous form, and so was not absolutely inaccessible to the public; but it had never before been presented so popularly by so prominent an exponent and under so favorable auspices. It appeared at the right time, took the public by storm, and became part of the common knowledge of the great general educated public of Germany. It was no longer reserved for theologians to dole out in homœopathic doses and in properly colored glasses the knowledge which the excavations in Mesopotamia furnished of the early religious development of the near Orient. The interest in the subject being aroused by Delitzsch's book, that knowledge will now be sought by every inquiring person.

It is remarkable that the attitude of many Protestant theologians towards the new light shed on the Old Testament by Assyriological inquiry is very similar to that taken from time immemorial by the Catholic Church with regard to the interpretation of the Bible generally. The latter Church holds that the history and composition of the Bible are of so intricate and delicate a nature, that no uneducated layman can possibly be competent to interpret it; this is the peculiar privilege of the educated and inspired Church, which if it is to dispatch its task well must be *a priori* infallible. And so certain Protestant theologians would now have it with us, as regards our ability to interpret the Bible in the light of Assyriology: these are matters that do not appertain to the "lay" province; the "lay" judgment is unfortunately ignorant of what constitutes the religious essence of the Old Testament and hence of what at all hazards must be saved.

But the attitude invariably follows the need. Alfred Jeremias, in a recently published and interesting pamphlet bearing the same

[1] *Babel and Bible.* By Dr. Friedrich Delitzsch. Translated from the German by Thomas J. McCormack. Chicago: The Open Court Pub. Co. Pp. 66. Price, boards, 50 cents net (2s. 6d. net).

title as our present article, viz., *Im Kampfe um Babel und Bibel*,[1] thoroughly reviews the situation and calls attention from another point of view to this very topic. Confuting the expressions of fear that Assyriological science is shaking the foundations of the sanctuary of Holy Scriptures, he remarks that it is strange the situation has been so completely reversed with years. In the first periods of Assyriological research, the inscriptions on the excavated monuments were stridently adduced as evidence in corroboration of the traditional views of the Bible. It was triumphantly proclaimed that now (Luke xix. 40) the very bricks of Babylon cried out in confirmation of the Holy Scriptures, and the world should hold its peace. Exact copies of the writings of Moses and the children of Israel during their sojourn in the desert were supposedly recovered from Nabatæan inscriptions; the historical existence of Abraham was confirmed by a brick; and the wall was actually discovered on which Belshazzar saw written the fateful words, *Mene mene tekel upharsin!*

But in Herr Jeremias's opinion the use of Assyriology as a weapon of destructive criticism for the overthrow of the traditional Bible is just as wicked as the preceding specimens of its application are stupid. One very advanced critic, cited by Jeremias, goes so far even as to wish for the time when the bricks of Babylon shall *compel* a more truthful view of the Old Testament, shall shatter in shards the doctrine of inspiration, and pave the way for a deeper, more spiritual and more "pious" conception. Verily, Babel *has* "laid her mailed fist on the Old Testament."

But we need have no fear. Orthodoxy and piety may yet lie down in harmonious union with Assyriology; and Herr Jeremias, who takes both the strictly religious and the strictly scientific view, well expresses the terms of the compromise as follows: "In so far as the Old Testament as a document of God's education of the human race may lay claim to being a *fides divina*, it stands in no need of corroboration by any auxiliary science. Here Babel can never promote the comprehension of the Old Testament, nor put it to hazard in any way, be the philological and scientific imbroglio what it may. Any ten of the marked passages of Luther's Bible are sufficient to demonstrate[2] how superior the spirit of the Old Testament is to that of Babylon. But the Old Testament has also its human side,—a side so stupendously interesting that no literature

[1] Leipzig; J. C. Hinrichs'sche Buchhandlung. 1903. Pp., 38.

[2] The most significant passages of the Bible are printed in Luther's translation in bold-faced type.

of antiquity can be mentioned with it in the same breath. Much of this remained obscure so long as the historical and cultural framework in which the life of Israel was enacted was veiled. But now the world around about Canaan is flooded with light; we can contemplate the people of the Old Testament in their relationship with the political and cultural conditions out of which it evolved and which have exerted a determining influence upon its destinies. In this domain cuneiform research can perform important services for the comprehension of the Bible. But the imperishable jewel which Israel possesses will shine only more brilliantly under this illumination, and likewise the *fides humana* upon which this unique book of literature rests its claims will stand triumphantly the ordeal of fire to which it has been subjected."

There has been little criticism of Delitzsch's book from the side of the Assyriologists proper. There are many points on which all Assyriological inquirers do not agree, and the few of these moot topics which are made to figure to advantage in Delitzsch's lecture are discussed in the extracts from current criticisms which we shall give below. Upon the whole, it is the universal verdict of the Assyriologists that Delitzsch's lecture "gives, so far as the monuments are concerned, those facts that may be regarded as indubitably established results of cuneiform inquiry." And the advantage in the bout will doubtless also remain with Delitzsch. For in purely technical and Assyriological matters, it is with him, as opposed to most of his theological critics, a case of Krupp guns against "halberds and blunderbusses."

EDUARD KOENIG.

The preceding remark leads us to the mention of the most prominent of all the anti-Delitzsch productions,—the *Bible and Babel* of Prof. Eduard Koenig of Bonn, referred to above. The title is a felicitous one, and from the great reputation of its author and the favor accorded it by the public, it certainly ranks as the accredited expression of the opposition and is a work of much merit. But the criticism which Jeremias advances against it, as against most of the other works of the theologians, is that it discusses technical Assyriological questions which only special students of this field are competent to handle, and so fails to establish the very points on which it stands. For example, König quotes as one of his main authorities the late C. P. Tiele, of Leyden, a celebrated Biblical scholar, and author of a widely-known history of

Babylon. But, says Jeremias, Tiele was himself not an Assyriologist, and, besides, his history having been written sixteen years ago cannot be used to refute opinions concerning inscriptions discovered and deciphered since then. The same stricture is in a measure also applicable to the case of E. A. Wallis Budge, likewise cited by Kõnig as a great Assyriologist.

We cannot enter into the details of Jeremias's discussion of König's technical philological mistakes, but we must in justice say that Jeremias sides with König on theological points, especially in the rejection of Delitzsch's broad assertion that "entire cycles of Biblical stories have been brought to light in the Babylonian texts, in much purer and more primitive form than they exist in the Bible itself?"

* * *

We shall now proceed to give a few extracts from reviews and letters showing the points about which the battle is raging.

A PROMINENT THEOLOGIAN'S VIEW.

A very prominent German theologian writes to us personally in connection with our publication of Dr. Delitzsch's *Babel and Bible*.

Our correspondent says: "You are to be commended for having made the American public acquainted with Delitzsch's *Babel and Bibel*, for the little book contains an extraordinary amount of stimulating and instructive matter, and it has been cleverly constructed, so as to appeal at once to the great reading public. Yet while there is no direct polemical attack made in it against the Bible, you will nevertheless understand that we theologians have witnessed the appearance of this essay and the great sensation which it has made with solicitude, nay even with distress; for the impression which it is inevitably destined to make on the unprepared reader is one that we could never wish to see."

M. HALÉVY'S OPINION.

M. Halévy, the French coryphæus of oriental research, is unstinted in his praise of the general character and excellence of Dr. Delitzsch's lecture, but he is unable to refrain from a few gentle, ironical remarks regarding the strained piety which marks its concluding words, the Chauvinism which exalts the German explorations and slurs those made by other countries, and lastly, the patent purpose for which the lecture was said to have been

written, namely, to obtain subsidies from the German government for the further prosecution of the Mesopotamian excavations by German scholars. He adds: "Sincerity nevertheless compels me to point out certain inept, inaccurate, and redundant statements which disfigure this otherwise beautiful lecture. The meaning of Numbers vi. 26 (page 29 *Babel and Bible*), is perfectly clear in itself and parallel to the passage in Job xxii. 26. The Babylonian form of expression adds absolutely nothing new. There is not a vestige of a proof that the Ur of Kasdïm, the home of Abraham, is identical with the city of Ur of Babylonia (page 4); the appellation Kasdïm designates in the Pentateuch 'territory which is exclusively Aramean'; Babylonia is called there 'the land of Sincâr.' To make a princess of Aryan blood and blond complexion out of the wife of Sardanapalus, of whom we have only an old and hastily executed sketch; to call the converted Jew Jean Astruc 'zealously orthodox' (page 41); to attribute to the Koran the beautiful legends of the Talmud, and to pass over almost in silence the magnificent results of the French excavations in Assyria and Babylonia, is carrying cleverness to an unjustified extreme. The picture (page 48) of the First Sin, borrowed from Ménant, and the comparison of the destruction of Rahab, a name for Egypt (Psalms lxxiv. 13, lxxxix. 11; Job xxvi. 12), with the splitting in twain of the body of the chaotic goddess Tiamat by Marduk, who made of it the earth and the heavens, will not stand before examination. In the first picture, the man and the woman who are seated opposite each other on the two sides of the tree are extending toward each other their hands and are not gathering the fruit that hangs upon the lower branches of the tree near their feet. And furthermore, the undulating line behind the woman is not beyond all doubt a serpent. The same predisposition to rest content with superficial appearances shows itself in the interpretation which is put upon Figure 58, page 64, which has no points of resemblance with the chariot of Ezekiel.

"Must it be repeated for the tenth time that the institution of Sunday rest is nowhere mentioned in cuneiform literature? The abstinences prescribed for the 7th, 14th, 19th (an awkward date omitted by the lecturer), 21st, and 28th days of the second Elud, which is an exceptional month, have nothing whatever to do with the Jewish Sabbath?

"Absolutely fantastical also is the attribution of the head of a *patesi* or priest-king preserved in the Berlin Museum to the imaginary and undiscoverable race of Sumerians who, although the

originators of the great Babylonian civilisation, are said to have been unable to count beyond 60! This error is an old one; the number 6 could never have formed a primitive multiple; the first series obtained by actual counting, which is based on the fingers of the hand, finds its natural termination at the number 5; Delitzsch has confounded instinctive *counting* with the *artificial* or *scientific mode of computation* by 60's, which has its advantages. We must deplore indeed the sad lot of these great allophylian creators of the most ancient civilisation who have left as a witness of their vanished glory only a single head of stone, fac-similes of which can be found by the hundreds in real flesh and blood in the ghettos of Podolia and Morocco.

"But the acme is reached in the following. Delitzsch affirmed in his *Paradise* that the name Yahveh came from the Sumerian *Y* and the consonants *hvh*. He now declares,—and this is the culmination of his lecture,—that he has found on three Babylonian tablets names belonging to *Canaanites established in Babylon*, and composed of the element Yahveh (page 61). Now, the spelling of the second form, *ya-u-um-il* (written *an*), signifies in good Babylonian 'Yaum [with mimmation for *iau* = *iam-mu*, Okeanos, god of the sea] is god.' The first form, written *ia-ah-pi-il*, exhibits a general Semitic name *Yahpĕêl* (Êl covers, protects, יַחְפְּאֵל analogous to יַחְצְאֵל). The possible reading *Yahveh-ill* would be equivalent to the Aramean יַהְוְאֵל, 'God exists,' and would not necessarily signify 'Yahveh is god.' In no case could a name like Yahveh-êl be Canaanite-Phœnician; for these people express the verb *to be* by כון and not by הוה.

"With so alluring a subject and before an audience chosen from among the highest intellects of the nation, it would have been more prudent to limit oneself to established facts, and not to offer ephemeral conjectures which can serve no other purpose than to dazzle superficial and inquisitive minds."

A ROMAN CATHOLIC VERDICT.

The Catholic News of New York, a journal "recommended by the Catholic hierarchy and the clergy as a model family paper," takes a very disimpassioned view of the situation. Imperturbably calm and restful in the consciousness of the Church's wary attitude toward the Bible and Biblical inspiration, it sees in the researches of the Assyriologists merely a powerful dissolvent of the Protestant faith, in no wise endangering the only true Christianity. The

Protestants based their faith on a "free Bible," and they are now having, against their will, their own medicine thrust down their heretical gullets. *The Catholic News* can scarcely conceal its delight. It says: "The school of which Professor Delitzsch is a distinguished member is by no means preoccupied about establishing the veracity of the Bible. The general purport of this lecture is to indicate that the Bible has borrowed almost all its religious and moral elements from the pagan Assyrians and Babylonians, and that it is a merely human compilation. The success which has attended the propagation of this view is to be seen in the total disintegration of all Protestant belief. It is the climax of irony that the sects which broke away from the Catholic Church with the cry, 'A free Bible; the Bible is the sole rule of faith,' are to-day giving up all supernatural belief because they have lost faith in the inspiration of the Bible, consequent upon the attacks of the higher criticism. Meanwhile the Catholic Church stands undisturbed on her old platform. The Catholic repeats the profession of St. Augustine: 'I would not accept the Bible except on the authority of the Church.' He is confident that in the long run, when all facts have been garnered and after hasty theories shall have been tried and found wanting, the light thrown by science on all the complications of the Biblical question will serve to corroborate the authoritative teaching of the Catholic Church, whose more than human prudence is nowhere more conspicuous than in her few guarded but comprehensive declarations concerning the fact and the nature of inspiration. Students who may not have time to study larger volumes dealing with Assyriology will find this little book a handy one to consult for the interpretation given to many archæological discoveries by the representatives of the higher criticism."

CORNILL ON "BABEL AND BIBLE."

Dr. Carl Heinrich Cornill, Professor of Old Testament History in the University of Breslau, and well-known to the English-reading public through his *History of the People of Israel* and *The Prophets of Israel*, devoted nearly three pages of the *Deutsche Litteratur-Zeitung* to an examination of Dr. Delitzsch's position. As Dr. Cornill is himself one of the leading higher critics of the Old Testament, his view of the controversy will be read with interest. He remarks in the opening lines of his review that Dr. Delitzsch belongs to the standard-bearers of German Assyriology and that he would not have been the son of his celebrated father had he not in

his Assyriological researches devoted his main attention to the Old Testament. He calls attention, however, to the statement made by Nöldeke in an old review of one of Delitzsch's books, that his labors "but too frequently gave the impression of an *ex parte* advocacy of Assyrian studies the importance of which for the Hebrew language Delitzsch altogether overrates, whilst disproportionately minimising other aids to this study, especially Arabic"; that persons unacquainted with Assyriology, therefore, were not warranted in "accepting as definitively established all the interpretations which Delitzsch put forward, especially since other Assyriologists frequently differed from him," and also because Delitzsch "often propounded untenable views" on non-Assyriological problems.

Taking the strictures of Nöldeke as the basis of his remarks, Cornill says that Delitzsch's last book is an "extravagant glorification of Babel at the cost of Bible," against which professional theological scholars must make emphatic protest. He continues:

"*Babel and Bible* offers nothing essentially new to Old Testament scholars. There is doubtless not a single professor of Old Testament research in any German university that has not already told all these things to his students in his lectures on Genesis. And Delitzsch does not gainsay this. He maintains only that the world at large has as yet heard very little of the silent labors of the Assyriologists and that it is now time for this knowledge to burst the barriers of the scholars' study and enter the broad path of life.

"If this is to be interpreted as an aspersion upon us scholars, it may be answered that we have never treated this knowledge as an esoteric doctrine, and that any one who desired any information about it had ample opportunity to obtain such, and further that there are matters and problems in science concerning which excessive discretion is the lesser evil. Now, in the exercise of this necessary discretion Delitzsch has been extremely chary. The impression that the lecture is apt to make on unprofessional readers is that the Bible and its religion is to a certain extent a mere offshoot of Babylonian heathendom which we have 'in purer and more original form' in Babel; and this impression is intensified by the fact that Delitzsch by his own statements actually expects from the results of the Assyrio-Babylonian excavations the advent of a new epoch in the *interpretation* as well as in the understanding of the Old Testament. I shall consider Delitzsch's statements under this point of view.

"The Babylonians also had their *shabattu*, he says, and 'there can therefore be scarcely the shadow of a doubt that in the last re-

sort we are indebted to this ancient nation on the banks of the Euphrates and the Tigris for the plenitude of blessings that flows from our day of Sabbath or Sunday rest.' What now was this Babylonian *shabattu*? Not the seventh day of each week, for the Babylonians regarded the seventh, fourteenth, nineteenth, twenty-first, and twenty-eighth calendar days of every month as days in which no work could be done; and for what reason? For fear of the wrath of the gods. These were the days that the Romans called *dies atri*, and are we now to believe that these *dies atri* of the Babylonians, which were inseparably linked with the dates of the calendar, are our Biblical Sabbath? Never! The Sabbath as the 'day of the Lord,' the view that on one day in every week we should cast aside all the trials and tribulations of our earthly life and live for God alone and be happy in communion with Him, is exclusively the property of the Bible, and for the 'plenitude of blessings' contained in it the world is indebted, not to Babel, but to Bible.

"We have long known that the Biblical story of the Creation (Genesis i.) reposed on a Babylonian foundation; but the only genuinely religious and imperishable fact of this history the almighty God, creator of heaven and earth, who speaks and it comes to pass, who commands and it is so, the holy personal God who created man in his own image and entrusted him with the duties attendant upon morality and a religious life, was given to the world, not by Babel, but by Bible.

"And how is it with the story of Paradise and the Fall of Man (Genesis ii. and iii.)? Delitzsch reproduces on page 48 the well-known ancient Babylonian clay cylinder which is said to contain a pictorial representation of this story. Assyriologists of the standing of Oppert, Ménant, Halévy, and Tiele vigorously contest this interpretation, even explaining the figures on the cylinder as two men, and are absolutely unable to recognise a serpent in the undulatory line in this picture. No Babylonian text corresponding to Genesis iii. has yet been discovered, and if the reader of page 38 of Delitzsch's book imagines that the clay tablet there mentioned containing 'the Babylonian legend of how it came to pass that the first man forfeited the boon of immortality' is the Biblical story of Genesis iii., 'in much purer and more primitive form,' I have only to say that he is sorely mistaken. But even granting that such is the case and that it has been proved that the Babylonians had a story according to which the first woman, tempted by the serpent, ate of the forbidden fruit and thereby brought sin and death into

the world, it will be distinctly seen from the picture that, leaving everything else out of account, the Babylonian pair are *clothed*, and that therefore what is perhaps the profoundest and most significant feature of the story of Genesis iii. belongs to Bible, and not to Babel.

"The conception of angels is without doubt 'characteristically Babylonian.' But whether they are also such in the Biblical sense as so grandly expressed in Psalms xci, verses 11 and 12, and in the utterance of Jesus, Matthew xviii. 10, is another question. In the Biblical representations Babylonian angels and eunuchs surround only the throne of the great king. And before Delitzsch wrote (page 55) his remarks concerning the demons and the devils which he says were possible only for the ancient Persian dualism, and were so destined to be committed forever and aye to the obscurity of the Babylonian hills from which they rose, he should have recalled to mind the important rôle which these concepts played in the religious life of Jesus, so that we might be justified in saying that there are 'still many Babylonian traits clinging even to the religious thoughts' of Jesus. But these concepts in the Bible are no Parsee importation; for the Bible can think of Satan and his angels under no other form than that of creatures of God who had fallen through their own sins and who stand thus on the most essential point in the sharpest imaginable contrast with the afore-mentioned Persian dualism. And does Delitzsch mean to say, when he affirms that the 5th, 6th, and 7th commandments occur 'in precisely the same order' in the Babylonian records, that Moses, or whoever else composed the Decalogue, sought advice from Babel, in the face of the fact that the order of the treasures which man seeks to protect, namely, life, family, and property, could not possibly be more natural and obvious, and that the humane Babylonian commandments have also their parallel in the Egyptian *Book of the Dead?*

"And how do matters stand with the Biblical problems concerning which we are led to believe that Babel only can explain Bible? Delitzsch sees in the Bible Amraphel of Genesis xiv, the great Babylonian king Hammurabi, the founder of the old Babylonian kingdom. I shall not gainsay that this identification is possible; and since Amraphel was 'the contemporary of Abraham' we shall certainly be glad to reckon the period of Abraham by that of Hammurabi. But if we consult the Assyriologists we shall find that in fixing the chronological place of the fifty-five years of the reign of this king they vary between 2394–2339 B. C. and 1923–

1868 B. C., with all the intermediate possibilities. From the point of view of method, therefore, is it not better to follow the plan of the Assyriologist Hommel, who, convinced of the correctness of the equation Amraphel = Hammurabi, as of the historical authenticity of the events narrated in Genesis xiv., starts, contrariwise, from the Bible and moulds the Babylonian chronology until it accords with the Biblical?

"Delitzsch's statements (page 61) concerning the three clay tablets containing the name of Yahveh are quite new. I cannot revive here, much less resolve, the question of the original monotheism of the Semites, or at least of 'the old Canaanite races which settled in Babylonia 2500 years before Christ, and to whom Hammurabi himself belonged'; but I have to confess that I cherish the gravest doubts concerning the correctness of the meaning of these tablets, or at any rate of the interpretation of the names *Ya-ah-ve-ilu* and *Ya-hu-um-ilu*. Of names containing the proper names of a god, and asserting additionally that this god is God, there are no instances whatever among the thousands of Semitic proper names which we know. Even the well-known Biblical *Joel* does not mean 'Yahveh is God.' But even granting that these old 'Canaanites' did possess the theophorous name *Yahu*, is this any proof that they also possessed the Biblical concept of Yahveh? How does it happen that of these 'monotheistic' kings one is called *Sinmu-ballit*, which means 'Sin gives life,' and another is *Samsu-iluna*, which means 'the sun is our god.'

"There are also other evidences in *Babel and Bible* that Delitzsch's statements must be accepted with reserve. We read on page 50: 'In the Book of Job (xxiv. 18), which appears to be extremely conversant with Babylonian modes of thought, we find comparisons drawn (xxiv. 18 et seq.) between the arid, waterless desert which is reserved for those that have sinned, and the garden with fresh, clear water which is reserved for the pious.' I believe that I also am tolerably well acquainted with the Book of Job, and I was consequently not a little astonished at reading these words, for as a matter of fact there is absolutely nothing of the kind in Job xxiv. 18, and if Delitzsch possibly introduced this meaning into the passage conjecturally, it was entirely inadmissible on his part to deal with it as with something that had been absolutely established.

"Again, the passage on pages 51–52 concerning Mahomet's Paradise,—namely: 'Two and seventy of these Paradisian maidens may every god-fearing man choose unto himself, in addition to the

wives that he possessed on earth, provided he cares to have them (and the good man will always cherish desire for the good),' —is not to be found at all in the Koran, but has been taken from E. W. Lane's *Customs and Manners*, part I., page 59, of the German translation.

"We are delighted and proud that Germany also is at last taking an independent part in the excavations in the valley of the Euphrates. But in entering upon this undertaking it is only fulfilling a national obligation of honor toward the educated world, and no one could entertain greater sympathy with these labors or wish them greater success than we theological investigators of the Old Testament, for we know the light which will be shed from that source upon the object of our studies. But we are far from believing that *a new interpretation* of the Old Testament will ever be brought to pass by these investigations, nay we are firmly convinced that in the struggle between Babel and Bible the Bible will ultimately come out victorious. Gunkel spoke for us all when he said:

" 'How incomparably superior the Hebrew legend is to the Babylonian! Should we not really be delighted at having found in this Babylonian parallel a criterion for estimating the real sublimity of the conception of God in Israel,—a conception of so much intrinsic power that it can purge and recast in such a manner material so repellent and outlandish? And this also we may say, that the Babylonian legend strongly impresses us by its barbaric character, whereas the Hebrew legend is far nearer and more human to us. Even granting that we have been accustomed from childhood to the Hebrew legends, we yet learn from this example that in our whole world of ideas we owe far more to these Hebrews than to the Babylonians.' "

THE GERMAN EMPEROR IN HIS NEW RÔLE AS A THEOLOGIAN.

From the foregoing review of the comment aroused by Delitzsch's *Babel and Bible* it may be vividly imagined that the doubts in Germany grew exceedingly rife concerning the Emperor's orthodoxy. The Emperor personally assisted Dr. Delitzsch in showing his stereopticon views to the court, and he also subscribed to the funds for sending Dr. Delitzsch again to Assyria. The situation appeared tottering, but it did not reach its appalling stage until on Dr. Delitzsch's return, when the Emperor invited him not only to discuss in private his new discoveries, but also to lecture pub-

licly before him on the New Testament. It was then at the instance of the influential churchman Dr. Dryander that the Emperor was persuaded, as guardian of State and Church, to restore the shaken equilibrium of the German Faith, and to write a public declaration of his personal creed. This he has delivered in the form of a pastoral letter on the real ways of conducting research in science and religion, and has incidentally put in a word for his own messianic function as Emperor of Germany, himself forming the end of a long line of divine incarnations beginning with Hammurabi and Moses, and running through Charlemagne, Shakespeare, Goethe, and Kant, and finding its apogee in his grandfather, Emperor William the Great, who was only an "instrument in the Lord's hand."

Being versatile almost to the danger-point, the Emperor will be excused if the reader finds his utterances at times incoherent, —though some of the inexactitude of his remarks may doubtless be due to the translation, which was evidently hurriedly made. But the Emperor is after all an old hand at theology, and our readers will remember the sermons with which Sunday after Sunday he punished the crew of the imperial yacht Hohenzollern when cruising in the Northern waters some summers ago.

We print below extracts from the Emperor's letter, as cabled to this country. The extracts are from the *Chicago Tribune* and the *New York Herald.*

THE EMPEROR'S LETTER.

"During an evening's entertainment with us Professor Delitzsch had the opportunity to fully confer and debate with her majesty, the empress, and Dr. Dryander, while I listened and remained passive. Unfortunately he abandoned the standpoints of the strict historian and Assyriologist, going into religious and theological conclusions which were quite nebulous or bold.

"When he came to speak of the New Testament, it became clear at once that he developed such quite divergent views regarding the person of our Saviour that I had to express the diametrically opposite view. He does not recognise the divinity of Christ as a deduction therefrom and asserts that the Old Testament contains no revelation about him as the Messiah.

"Here the Assyriologist and the historical investigator ceases and the theologian begins, with all his light and shadow sides. In this province I can only urgently advise him to proceed cautiously,

step by step, and at any rate to ventilate his theses only in the theological books and in the circle of his colleagues. Spare us, the laymen, and, above all, the Oriental society, from hearing of them.

"We carry on excavations and publish the results in behalf of science and history, but not to confirm or attack religious hypotheses with Professor Delitzsch, the theologian, who has run away with the historian."

CRITICISM FOR DR. DELITZSCH.

The Emperor then goes on to express regret at the fact that Professor Delitzsch did not adhere to his original purpose of translating and interpreting the inscriptions excavated by the society, as illustrating the relations between Babylonian customs, morals, historical events, and traditions, etc., and the Israelites, "which would have been in the highest degree interesting for laymen," and adds:

"He approached the question of revelation in a polemical tone, more or less denying it or reducing it to purely human matters. That was a grave error, for thereby he touched on the innermost, holiest possession of many of his hearers, which shook and even shattered the foundations of their faith. It is a deed that only the greatest genius should venture to attempt and for which the mere study of Assyriology did not justify him."

KAISER'S IDEA OF REVELATION.

The Emperor then gives his personal views regarding the revelation, saying:

"I distinguish between two different kinds of revelation,—one progressive, and, as it were, historical; the other purely religious, as preparing the way for the future Messiah.

"Regarding the former, it must be said for me, it does not admit of a doubt, not even the slightest, that God reveals himself continuously in the race of man created by him. He breathed into man the breath of his life and follows with fatherly love and interest the development of the human race. In order to lead it forward and develop it, he reveals himself in this or that great sage, whether priest or king, whether among the heathen, the Jews, or the Christians. Hammurabi was one. So was Moses, Abraham, Homer, Charlemagne, Luther, Shakespeare, Goethe, Kant, and Emperor William the Great. These he sought out and endowed with his grace to accomplish splendid, imperishable results for

their people, in their intellectual and physical provinces, according to his will. How often my grandfather pointed out that he was only an instrument in the Lord's hands.

REVELATION AND THE JEWS.

"The second form of revelation, the more religious, is that which leads to the manifestation of our Lord. It was introduced with Abraham, slow but forward looking and omniscient, for humanity was lost without it. Now begins the most astonishing activity of God's revelation. Abraham's race and the peoples developing from it regard faith in one God as their holiest possession, and, it follows, hold fast to it with ironlike consistency. Split up during their Egyptian captivity, the divided elements were again welded together by Moses, ever trying to hold fast to their monotheism. It was the direct intervention of God that caused the rejuvenation of this people, thus proved through centuries, till the Messiah, heralded by prophets and psalmists, finally appeared, the greatest revelation of God in the world, for he appeared in the son himself. Christ is God, God in human form. He redeemed us and inspires, entices us to follow him. We feel his fire burning in us. His sympathy strengthens us. His discontent destroys us. But also his intercession saves us. Conscious of victory, building solely upon his world, we go through labor, ridicule, sorrow, misery, and death, for we have in him God's revealed word, and he never lies.

OLD TESTAMENT PARTLY HUMAN.

"That is my view of these matters. It is to me self-evident that the Old Testament contains many sections which are of a purely human and historical nature, and are not God's revealed word. These are merely historical descriptions of incidents of all kinds which happen in the political, religious, moral, and intellectual life of this people.

"The legislative act on Sinai, for example, can be only regarded as symbolically inspired by God. When Moses had to reburnish well known paragraphs of the law, perhaps derived from the code of Hammurabi, in order to incorporate and bind them into the loose, weak fabric of his people, here the historian can perhaps construe from the sense or wording a connection with the laws of Hammurabi, the friend of Abraham. That is perhaps logically correct. But that will never disguise the fact that God in-

cited Moses thereto and in so far revealed himself to the people of Israel.

"I believe in the one and only God. We may need a form in order to teach his existence, especially for our children. This has hitherto been the Old Testament. The present version of this will be possibly and substantially modified under the influence of research through inscriptions and excavations. That does not matter. Neither does it matter that much of the nimbus of the chosen people will thereby disappear. The kernel of the contents of the Old Testament will remain always the same,—God and his works. Religion has never been the result of science, but the pouring out of the heart and being of man from intercourse with God."

THE EMPEROR'S ORTHODOXY.

BY THE EDITOR.

EMPEROR William criticises Delitzsch for "abandoning the standpoint of the strict historian" and "straying into religious and historical conclusions and hypotheses which are quite nebulous and bold." He says that "the theologian has run away with the historian."

Probably the case is just the reverse. Professor Delitzsch, the son of an equally famous Hebrew scholar and a pious Christian, was from the start an orthodox theologian, but his theology was modified under the influence of his historical investigations. To the Emperor, who naturally clings to the old conception, Delitzsch seems to have twisted the results of his historical investigations (at least in the New Testament) to suit his theology. The Emperor concedes that "the Old Testament contains many sections which are of a purely human and historical nature," and goes even so far as to add that they "are *not* God's revealed word." He declares "that the legislative act on Sinai, for example, can only be symbolically regarded as inspired of God." Apparently the Emperor makes a difference between the Jewish and the Christian Scriptures, and in this sense he says: "Neither does it matter that much of the nimbus of the chosen people will thereby disappear."

This attitude of the Emperor is characteristic, and he being a pronounced upholder of militant and pious Protestantism, his views may be regarded as typical for large classes of all Protestant denominations.

The Emperor's letter is an important document in the evolution of religion: it opens to the Christian laity a period of discussion concerning the nature of the New Testament. The battle concerning the Old Testament is as good as ended. No one who has investigated the subject denies that the Old Testament is the product of an historical evolution. Of course, it is Jewish, not

Babylonian; nevertheless, the Babylonian civilisation forms the background, and many things which were formerly believed to have been dictated by the Holy Ghost are now seen to be the natural outcome of historical conditions. But on that account the nimbus of the chosen people will no more disappear than the glory of Homer, and Phidias, and Pericles, and Socrates can be dimmed because we can trace their greatness to conditions and understand how they naturally grew and rose into being.

The old narrow view is not abandoned at once, and many intermediate steps are taken which attempt compromises. So we read for instance in the interesting pamphlet of Alfred Jeremias that we must grant the prevalence of a monotheism among the pagan nations long before the rise of Israel as a nation. Hammurabi, for instance, a contemporary of Abraham who lived more than half a millennium before Moses, introduces his code of laws with the invocation, "Thus speaketh ILU SIRU, i. e., God the Supreme." "But," adds Professor Jeremias, "there is this difference between the pagan monotheism which can be traced among all the nations, and Hebrew monotheism, that "God himself filled the latter with his own revelation." In other words, when Plato speaks of God, we have to deal with a purely human speculation, but when David danced before the ark of the Lord we may be sure that then God was personally present.

The truth is, we are familiar with the Hebrew view, for our own belief has developed out of it. We are not so familiar with pagan views. Therefore when Zarathustra speaks of Ahura Mazda, the Lord Omniscient, we admire his wisdom, but fail to find any connection with our own belief. The term sounds strange to our ears because it remains unassociated with our prayers and has no relation to the traditions that have become sacred to us. It appears as the natural product of human thought, while the Hebrew names Jehovah, Zebaoth, Elohim, even when the context betrays a pagan or even polytheistic conception, are filled with a sanctity and a religious awe that is to us the evidence of a supernatural revelation.

How true this is appears from the fact that the original and correct form Yahveh, which is not used in our churches, does not possess the same sacred ring to our ears as the corrupted form Jehovah. The name Yahveh is written in our brains, not in our hearts. Yahveh is the name of a deity with which we have become acquainted through the study of Hebrew literature, and we would deem it all but a sacrilege, a kind of paganism, to pray to Yahveh

or to sing hymns to him. The word Jehovah, an unmeaning combination of the consonants of the word "Jahveh," with the vowels of another, "Adonai," was invented in the days of Luther. It was unknown before the year 1519; but having slipped into our prayers, we still sing the triumphal strain, "Jehovah is King."

When we become acquainted with the monotheism of Hammurabi, we put him down as a philosopher, but the God of Moses is the same God to whom Christians bend the knee. That makes a difference. The associations with our own religious life, our forms of worship, our prayers, are important for obvious psychological reasons.

Through Delitzsch, the Emperor became familiar with the religion of ancient Babylon, and he took a liking to the Assyrians. The Assyrian guards were so much like the Prussian grenadiers; their kings were generals enjoying the display of armies; they believed in the religion of the mailed fist and bestowed much attention upon military attire, even as to the minute details of hair-dressing. While the Emperor's court barber patented the fashion of an upturned mustache under the name *Es ist erreicht*, Delitzsch speaks of the official style of the Assyrian beard as *Noch nicht erreicht*. The similarities were so many and so striking that the Emperor felt the thrill of kinship and showed himself willing to transfer the nimbus from the chosen people to the rulers of ancient Babylon.

Truly, the Emperor is right when he says that "God reveals himself continuously in the race of men." It is a good old doctrine, and orthodox too, that "God spoke not to Moses alone," and St. John the Evangelist says that "that was the true light which lighteth every man that cometh into the world."

But it is natural that Christians raised in the traditional dogmatism should shrink from the idea that the New Testament (as well as the Old) should be conceded to be the product of historical conditions. "Here," they argue, "Christ speaks himself," and (to use the Emperor's own words) "Christ is God, God in human form .... We have in Him God's revealed word, and He never lies."

Certainly, God never lies. But do we have in the New Testament Christ's own words? We have reports about Jesus, and these reports are as human as are the Scriptures of the Old Testament. Christianity would be in a sad plight if the New Testament had indeed to be regarded as inspired *verbatim* by God. We cannot enter here into details but would suggest only that the mere contradictions in the Gospels alone force us to look upon them as human compositions.

The difficulties of regarding the Bible as literally the word of God are almost greater in the New Testament than in the Old. Any one who has studied the Scriptures knows that the problem is grave and cannot be easily disposed of.

The great question back of all these discussions is simply this: "Shall we, or shall we not, grant Science the right to modify Religion?" And the question need not be answered. Men of science know that whether or not we grant science the right to modify religion, science is shedding her light upon religious problems, and she is constantly and continuously modifying religion. Science (represented in physics, astronomy, physiology, psychology, history, text-criticism, etc., etc.) has enlarged our views of the world and deepened our conception of God. The scientific spirit of the age has begotten a new theology, a truly scientific treatment of the problems of God, inspiration, and revelation, which we call theonomy, for it ranges as high above the antiquated theology as astronomy is superior to astrology.[1]

After all, Christians are not pledged to dogmas, but to the truth. Orthodoxy means the right doctrine, and the right doctrine is that which can stand the test of critique. Orthodoxy so called is a misnomer and ought to be called dogmatism. The truth can be found only by searching, and the methods of an exact search are called science.

Science is not human; science is divine, and the development of science is the coming of the spirit of God,—of the true God, of the God of Truth, who is "the light that lighteth every man."

The dogmas of Christianity are formulations of the Truth as interpreted by our forefathers. Let not Athanasius with his limited knowledge bind the conscience of a Delitzsch. Had he lived in the days of the Alexandrian church-father, he would most likely have acquiesced in the Nicene formulation of the Christian creed; but new issues have arisen and some of the traditional beliefs have become untenable. Dogmas may be venerable on account of their antiquity, but they cannot stand against Truth. Truth alone is holy, and the Truth of Science will finally win the day.

Delitzsch sums up his position in these words: "Do not let us blindly cling to dogmas which science has shown to be superannuated, merely for fear of abandoning them. Faith in God and the true religion may thereby be injured."

Whatever the final result of the present discussion shall be,

[1] Cf. the writer's articles "Theology as a Science" in *The Monist*, Vol. XII., No. 4. and Vol. XIII., No. 1.

we may rest assured that the modification of our religious faith will not be for the worse. Christianity has again and again adapted itself to a more scientific conception of the world. How strong was the opposition of the so-called orthodox to the Copernican system, how fierce were their attacks on the doctrine of evolution! But that is now a matter of the past, and religion has certainly been broadened as well as deepened by a broader and deeper insight into the constitution of nature. Therefore let us have faith in the Truth.

Says Esdras: "As for the truth, it endureth, and is always strong; it liveth and conquereth for evermore.

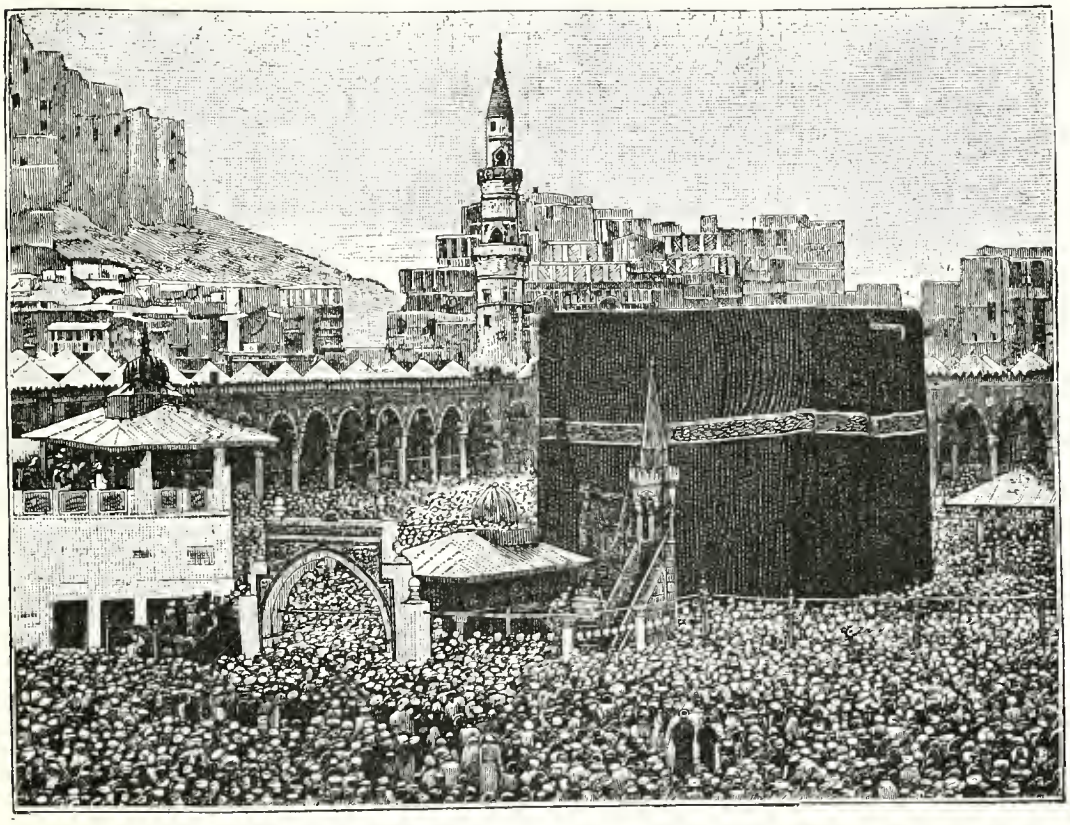
"With her there is no accepting of persons or rewards; but she doeth the things that are just, and refraineth from all unjust and wicked things; and all men do well like of her works.

"Neither in her judgment is any unrighteousness; and she is the strength, kingdom, power, and majesty of all ages. Blessed be the God of Truth." (1 Esdras iv. 38–40.)

THE CAABA.

BY THE EDITOR.

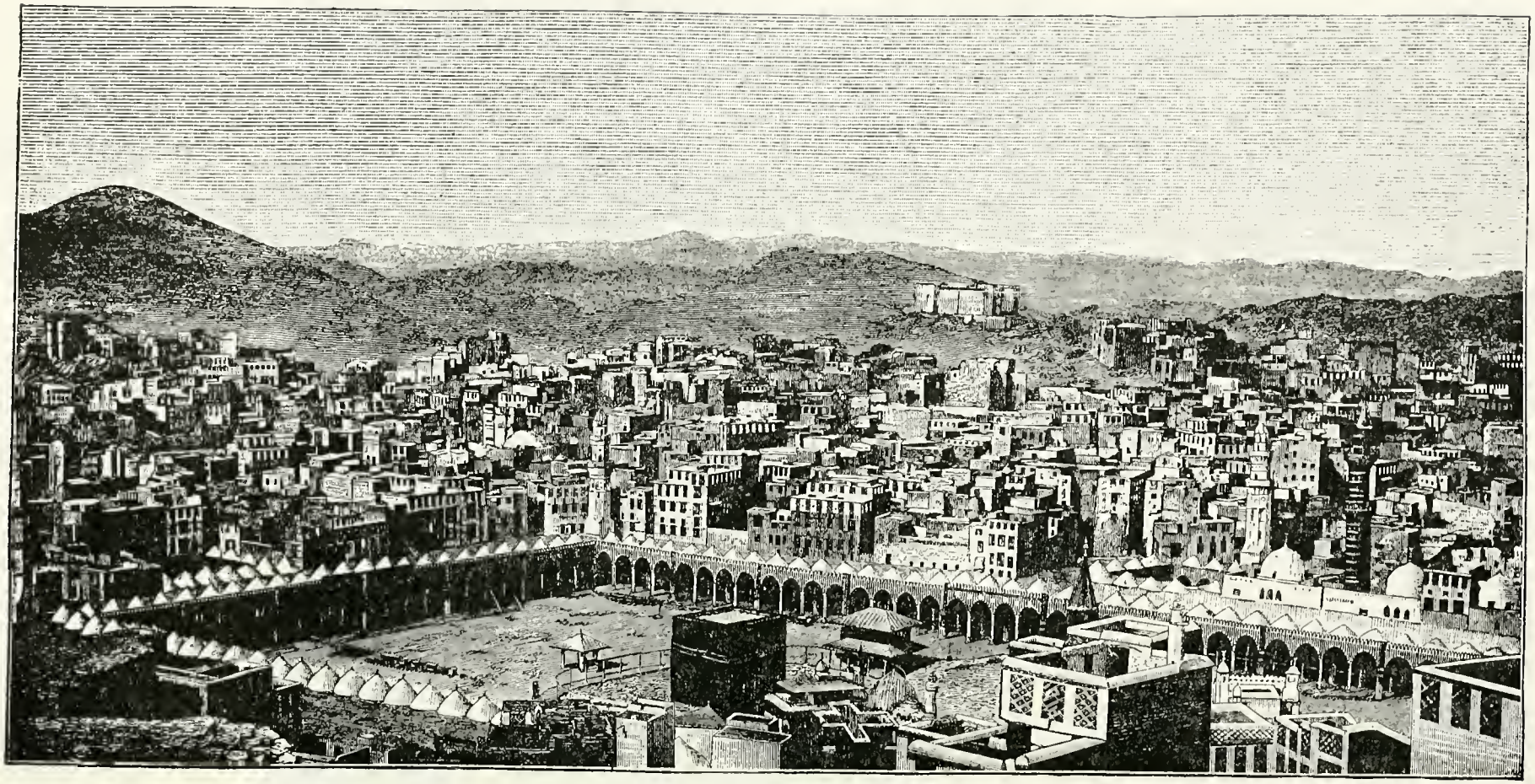
ISLAM, which means surrender, viz., to God, is the strictest monotheism; we commonly call it Mohammedanism, but pious Mussulmans shrink from the idea of designating their religion after



THE CAABA SURROUNDED BY PILGRIMS.

After Le Bon, *La civilisation des Arabes*, p. 119. Cf. Lenormant, *L'histoire de l'Orient*, Vol. VI., p. 447.

the name of a man. The object of their devotion is Allah, who is neither begetter nor begotten, but the eternal and omnipotent God. Mohammed is the prophet of Allah, and the religion of Mohammed's adherents ought to be called Islam.



VIEW OF MECCA WITH THE CAABA.

After Dr. Le Bon, *La civilisation des Arabes*, p. 117 (Paris, Didot). Cf. Lenormant, *L'histoire de l'Orient*, Vol. VI., p. 446.

Mohammed has never been painted or portrayed in any way by any Moslem artist, and all pictures of him that exist are made by giaours who either have no knowledge of the principles of Islam, or purposely ignore them; for the Mussulmans have inherited the Semitic hatred of idols, and obey literally the rule of the Mosaic Law that forbids the making of likenesses or images. Even nowadays it is dangerous for foreign artists to paint pious Mohammedans, and travellers are warned not to take photographs of natives in the Orient, because they might meet with unpleasant experiences.

Although Mohammed succeeded in forcing his religion on his people only after great struggle, Islam, that is the typically Arabic monotheism, is nevertheless the natural outcome of the religious development of Arabia. The change had to come sooner or later, and Mohammed made himself the prophet of an inevitable movement which, in spite of its radical denunciations of idolatry even in its mildest forms, retained many features of the ancient pagan traditions. The most noteworthy of these is a remnant of Sabaism the worship shown to the Caaba, which is a meteorite of enormous size lying in the holy city of Mecca. It is shrouded from sight by a veil, and is surrounded by a quadrangle after the style of a Mohammedan mosque. One of our illustrations shows the city of Mecca with the Caaba in its midst, while the other shows the Caaba at the time of its annual festival, surrounded by pilgrims.

The incongruence of this relic of ancient Sabaism is of course not at all felt by any pious Mussulman. It is an interesting example of the fact that old traditions cling to people and ancient ceremonies are observed, even though their sense becomes lost in the progress of the age and through a reformation of the underlying religious ideas.

CRITIQUE OF THE CONCEPT OF TEMPERATURE.[1]

BY DR. ERNST MACH.

[CONCLUDED.]

IT is remarkable how long a period elapsed before it definitively dawned upon inquirers that the designation of *thermal states* by *numbers* reposed on a *convention*. Thermal states exist in nature, but the concept of temperature exists only by virtue of our arbitrary *definition*, which could very well have taken another form. Yet until very recently inquirers in this field appear more or less unconsciously to have sought after a *natural* measure of temperature, a real temperature, a sort of Platonic Idea of temperature, of which the temperatures read from the thermometric scales were only the imperfect and inexact expression.

The concepts temperature and quantity of heat were never kept clearly apart by Black and Lambert, and for both these ideas, between which we now distinguish, Richmann uses the same word, *calor*. At this stage, therefore, we are unwarranted in expecting clearness. But the obscurity extends farther than we should have thought. Let us look at the facts.

Lambert[2] well characterises the state of opinion of his time when he says: "Inquirers doubted whether the *actual* degrees of heat were in reality proportional to the degrees of the expansion. And even granting that this were so, the further question arose, at what degree the counting should begin." He then discusses Renaldini's proposition to graduate thermometers by means of water-mixtures, and he appears to have regarded this last scale as a natural one.

Dalton has the following passage:[3] "Liquids have been tried, and found to expand unequally, all of them expanding more in the

[1] Translated from Mach's *Principien der Wärmelehre* by Thomas J. McCormack.

[2] Lambert, *Pyrometrie*, p. 52.

[3] *Loc. cit.*, p. 9.

higher temperatures than in the lower, but no two exactly alike. Mercury has appeared to have the least variation, or approach nearest to uniform expansion."

Gay-Lussac says: "The thermometer, as it exists to-day, cannot indicate the exact relationships of *heat*, for we are not yet cognisant of the connection obtaining between the degrees of the thermometer and the *quantities* of heat which these degrees possibly indicate. It is generally believed, indeed, that the equal divisions of this scale represent equal *tensions* [expansive forces] of the caloric; but this opinion is based on no very positive fact."[1] Manifestly Gay-Lussac was in a fair way to overcome the obscurity of his contemporaries on this point, but he was nevertheless unsuccessful.

It is very singular that inquirers of the exactness of Dulong and Petit, who were the first to introduce clearness into this field, continually lapse, in their expressions at least, to the old points of view. We read in one place:[2] "It will be seen, from the deviation that occurs at so low a temperature as 300°, how greatly glass departs from *uniformity*." We ask in astonishment: "By what criterion is the 'uniformity' or 'lack of uniformity' of glass to be estimated and measured?" The following passage is also characteristic:[3] "We are constrained to say, nevertheless, that the well-known uniformity in the principal physical properties of all gases, and especially the identity of their laws of dilatation, render it very *probable* that in this class of bodies the *disturbing* causes do not produce the same effects as in solids and liquids; and that consequently the changes of volume produced by the action of the heat are in the present instance *more immediately dependent on the force that produces them*."[4]

This vacillation between a physical and a metaphysical point of view has not been entirely overcome, even to-day. In an excellent modern text-book by a distinguished inquirer in this field, we

1 *Ann. de chim.*, XLIII., 1802, p. 139: "Le thermomètre, tel qu'il est aujourd'hui ne peut servir à indiquer des rapports exacts de la *chaleur*, parce que l'on ne sait pas encore quel rapport il y a entre les degrés du thermomètre et les quantités de chaleur qu'ils peuvent indiquer. On croit, il est vrai, généralement, que des divisions égales de son échelle représentent des tensions égales de calorique; mais cette opinion n'est fondée sur aucun fait bien positif."

2 *Ann. de chim.*, VII., 1817, p. 139.

3 *Ann. de chim.*, VII., 1817, p. 153.

4 "Nous devons dire cependant que l'uniformité bien connue dans les principales proprietés physiques de tous les gaz, et sourtout l'identité parfaite de leurs lois de dilatation, rendent très-vraisemblable que, dans cette classe de corps, les causes perturbatrices n'ont plus la même influence que dans les solides et liquides; et que par conséquent les changements de volume produits par l'action de la chaleur y sont dans une dépendance plus immédiate de la force qui les produit."

read: "The indications of the air-thermometer are comparable. But it by no means follows from this that the air-thermometer actually measures that which we *conceive as temperature*; it has, in fact, never been proved that the increase of the pressure of gases is *proportional to the increase of the temperature*, for hitherto we have only *assumed* this."

No less a man than Clausius has similarly expressed himself: "We may infer from certain properties of gases that the mutual attraction of their molecules is very weak at their average distances and hence offers a very slight resistance to the expansion of the gases, so that it is the walls of the containing vessel that have to offset by their resistance nearly the entire effect of the action of the heat. The outward, sensible pressure of the gas, accordingly, forms an *approximate* measure of the repellent force of the heat contained in the gas, and, therefore, conformably to the preceding law, this pressure must be *approximately* proportional to the absolute temperature. The correctness of this inference has, indeed, so much intrinsic probability that many physicists since Gay-Lussac and Dalton have assumed it outright, and based upon it their calculations (!) of the absolute temperature."[1]

In a valuable treatise on pyrometry we find the following:[2] "In view of Gay-Lussac's discovery, made as early as 1802, that all gases suffer, under the action of heat, like expansions for like increases of temperature, the *hypothesis* is doubtless justified that the expansion in question is *uniform* for all *degrees of temperature*, inasmuch as it is *more probable* that the expansion should be uniform than that all gases should exhibit *the same variations*."

On the other hand, it is to be particularly noted, that W. Thomson, as early as 1848, in propounding his absolute thermodynamic scale of temperature, was very clear on this matter and went critically to the bottom of it, as we shall see in a later chapter in detail.

After what has just been adduced, the preceding exposition, however obvious it may appear to individual physicists, will not, I trust, be regarded as altogether redundant. We repeat, the question is always one of a scale of temperature that shall be *universally comparable and that can be constructed* with accuracy and certainty, and never one of a "real" or "natural" scale.

It could be easily shown, by analogous examples from other departments of physics, that men generally are inclined to hypostatise their abstract ideas, and to ascribe to them a reality outside

1 *Mechanische Wärmetheoric*, 1864, I., p. 248. 2 Bolz, *Die Pyrometer*, Berlin, 1888, p. 38.

of consciousness. Plato, in his doctrine of Ideas, merely exploited this tendency. Even inquirers of the rank of Newton, despite their precepts, were not always discreet enough in this respect; it will therefore repay the trouble to inquire in what the difficulty in the present case consists. We start in our investigations from the *sensation of heat*, and find ourselves later obliged to substitute for this original criterion of the behavior of bodies *other criteria*. But between these criteria, which may be quite distinct, *no exact parallelism* obtains. For this reason, latently and unconsciously, the original sensation of heat, which was replaced by these non-conforming criteria, remains the *nucleus* about which our ideas cluster. Then, on our theoretically discovering that this sensation of heat is in its turn nothing but a symbol for the collective behavior of the body, which we already know and shall later know better,[1] our thinking compels us to group these varying phases of collective behavior under some *single* head and to designate them by a *single* symbol called *state of heat*. Scrutinising our procedure closely, we again discover this same *sensation of heat*, which is the initial and the most natural *representative* of the group in its entirety, as the indistinct nucleus of the symbol last reached. And to this symbol, which is after all not entirely our arbitrary creation, we appear to be forced to attribute reality. Thus, the impression arises of a "real temperature," of which that read from the thermoscope is only a more or less inexact expression.

Newton's conceptions of "absolute time, "absolute space," etc., which I have discussed in another place,[2] originated in a quite similar manner. In our conceptions of time the *sensation of duration* plays the same part with regard to the various measures of time as the sensation of heat played in the instance just adduced.[3] The situation is similar with respect to our conceptions of space.

Once we have clearly comprehended that by the adoption of a new, arbitrarily fixed, more sensitive and more delicate criterion of the thermal state an entirely *new* point of view has been assumed, and that henceforward the new criterion alone is the basis of our investigations, the entire illusion will be dispelled. This new criterion, or *indicium*, of the thermal state is the *temperature-number*, or more briefly, the *temperature*, which reposes on an arbitrary convention in three respects,—first with regard to the selection of vol-

1 Compare Mach, *Analysis of the Sensations*, Eng. trans., Chicago, 1897, pp. 18 et seq. Also Popper, *Elektrische Kraftübertragung*, Vienna, 1884, p. 16.

2 *Science of Mechanics*, Eng. trans., 2nd ed., pp. 222–238 and 541.

3 *Analysis of the Sensations*, Eng. trans., pp. 109 et seq.

ume as the index, secondly with regard to the thermoscopic substance employed, and thirdly with regard to the principle by which the numbers are coördinated with the volume.

An illusion of another sort is involved in a peculiar, almost universally accepted, process of reasoning which we shall now discuss. Taking the numbers indicative of the temperatures as proportional to the pressures exerted by a mass of gas at constant volume, it will be seen that while the pressures and the temperatures may increase without limit, they can never fall below zero. The equation

$$p = p_0(1 + \alpha t)$$

asserts that for every degree increase of temperature the pressure increases by $\frac{1}{273}$ of its amount at the point of melting ice; or rather, contrariwise, that when the pressure increases $\frac{1}{273}$, *we reckon* the temperature one degree higher. For temperatures below the point of melting ice we should have

$$p = p_0(1 - \alpha t),$$

from which it will be apparent that if $\frac{1}{273}$ of the pressure p_0 be deducted 273 times, and the temperature $-273°$ C. attained, the pressure will be zero. The favorite mode of conception now is, that when a gas has been cooled off to this point it no longer contains any "heat"; that consequently any further cooling below this temperature is impossible; that, in other words, the thermal states have apparently *no upper* limit, but possess a *lower* limit at $-273°$ C.

The principle of coördination employed by Dalton[1] did not remain in use, but not the slightest objection can be made to its admissibility. On this principle, when the pressure of the gas increases by 1.0179, the temperature increases ten Daltonian degrees. When the pressure diminishes by 1.0179, the temperature sinks ten degrees. We can repeat this last operation as often as we wish without ever reaching a pressure zero. If Dalton's scale were used, the idea need never have occurred to us that a thermal state could exist having the gaseous pressure zero,—that the series of thermal states had a lower limit. The possibility of a gaseous pressure zero would not, indeed, have been affected by this fact, because Dalton does not reach the lower limit for the reason that he moves toward it, like Achilles toward his tortoise in the famous paradox, with steps of diminishing magnitude. The essential point to be empha-

[1] See *The Open Court* for February, p. 102.

sised here is the precariousness of regarding outright the properties of a *system of symbols* as the properties of the *things symbolised* by them.

Amontons, in propounding his scale of temperature, starts from the idea that the pressure of a gas is produced by "heat." But this absolute zero-point is not the only one that has been proposed, nor is it the only one that could be proposed on the ground of equally sound ideas. Taking the coefficient of expansion of mercury, and pursuing the same train of reasoning as with air, we should obtain —5000° C. as our absolute zero. As with air and with every other body, so likewise here with mercury, the coefficient of *expansive force* might be employed instead of the coefficient of expansion, in order to eliminate the distressing idea of a body losing its volume when it loses its heat.

Dalton's[1] conception is that a body contains a certain quantity of caloric. Increasing the caloric raises the temperature; withdrawing it altogether reduces the body to the absolute zero-point. This idea of heat as a substance (caloric) was derived from Black, although the latter inquirer was no friend of speculations of the stripe we are now discussing. If ice at 0° C. is converted into water at 0° C., and for every kilogramme in this process eighty kilogramme-calories are absorbed, Gadolin[2] and Dalton contend that owing to the doubling of the capacity for heat by the liquefaction of the water, the entire loss of caloric from the absolute zero-point to 0° C. is compensated for by the eighty thermal units in question. Whence it follows that the absolute zero-point lies at $2 \times 80 = 160°$ C. below the melting-point of ice. The same zero-point is on the same premises obtained for many other bodies. But for mercury, which has a low fusing-point and which exhibits a very slight difference of specific heat in its solid and liquid conditions, 2021° C. below the melting-point of ice is obtained as the absolute zero. If two bodies, A and B, of like temperature, be mixed together, and the mixture $A + B$ shows an alteration of temperature, we can in an analogous manner, after determining the specific heats of A and B and $A + B$, deduce the absolute zero-point from the change in the temperature. By mixing water and sulphuric acid Gadolin found the absolute zero-point to lie between —830° C. and —1720° C. Other mixtures, and also chemical combinations, have been similarly treated, and have again yielded different results.

We have thus a multitude of different absolute zeros. To-day

[1] *Loc. cit.* [2] Cited by Dalton in another work.

only one of these is in use, that of Amontons, which, conformably to the dynamic theory of gases, has been connected with the destruction of the velocity of the moving gaseous molecules. But all these deductions alike rest on hypotheses regarding the processes by which we conceive the phenomena of heat to be produced. Whatever value we may attribute to these hypothetical constructions, we must yet admit that they are unproved and unprovable, and cannot antecedently determine facts which may at some time be rendered amenable to observation.

We now revert to the point which we were discussing. The pressures of gases are *indices* or *symbols* of the thermal states. When the pressures vanish, the symbols likewise vanish; our gas is rendered unserviceable as a thermoscope; we must seek another. That the thing symbolised also disappears, does not at all follow. For example, if a thermoelectromotive force on approaching a certain high temperature should diminish, or become zero, it would doubtless be thought extremely rash were this temperature to be regarded as indicating an *upper* limit to the states of heat.

The temperature-numbers again are symbols of the symbols. From the fact that our fortuitously chosen system of symbols has a limit, nothing whatever follows as to the limits of the thing symbolised. I may represent *sensations of tone* by *rates of vibration.* These latter, as positive numbers, have a lower limit at zero, but no upper limit. I may also represent sensations of tone by the *logarithms* of the rates of vibration, and obtain a much better view of the musical intervals. In which case, my system of symbols (running, as they do, from $-\infty$ to $+\infty$) has neither a lower *nor* an upper limit. But the system of tone-sensations is not a whit disturbed by this; it has *both* an upper and a lower limit. I may *define* an infinitely high or an infinitely low tone by my system of symbols, but it in no wise follows from this that such a tone *exists.*

The entire train of reasoning reminds one vividly of the so-called ontological proof of the existence of God; it is scholastic to a degree. The concept is defined, and existence is predicated of its *attributes*; whence follows forthwith the existence of what has been defined. It will scarcely be gainsaid that a similar logical looseness is unpermissible in modern physics.

We may accordingly assert, that even granting it were possible by cooling a gas to reduce its pressure to zero, this result would simply prove the unfitness of gases as thermoscopic substances from this point downward. But that the thermal states have or have not a lower limit, would in no wise follow from it.

And, similarly, nothing follows as to an *upper* limit for thermal states from the fact that the pressure of a gas may be *conceived* to increase without limit, or from the fact that the numbers expressing the temperatures have no upper limit. A body melts and boils at certain temperatures. And the question naturally arises whether a gas can attain indefinitely high temperatures without suffering important alterations of character.

Experience alone can determine whether the series of thermal states has a lower or an upper limit. Given a body of definite thermal conditions and supposing no other can be produced that is hotter or colder than it, then and then only can such a limit be established.

The view here taken does not exclude our conceding to Amontons's zero the rôle of a *fiction*, or our investing the Law of Boyle and Gay-Lussac with the simple form before referred to,[1] whereby many discussions to be later developed are very materially simplified.

From the foregoing it will be readily seen that *temperature* is nothing but the *specification* or *designation* of a thermal state by a *number*. This temperature-number has exclusively the properties of an *inventorial number*, by means of which the same thermal state can again be recognised, and, if necessary, sought for and reproduced. This number likewise informs us in what *order* the designated thermal states succeed one another and *between* what other states a given state is situated. In the investigations to follow it will appear that the temperature-numbers fulfil still other, and indeed extremely comprehensive, functions. But this was not due to the acumen of the physicists that propounded the system of temperature-numbers, but was the outcome of several fortunate circumstances, which no one could foresee and no one control.

The *concept of temperature* is a *concept of level*, like the height of a heavy body, the velocity of a moving mass, electric and magnetic potential, and chemical difference. Thermal action takes place between bodies of different temperature, as electric action does between bodies of different potential. But whilst the concept of potential was deliberately framed in perfect consciousness of its advantages, in the case of the concept of temperature these advantages were a matter of good luck and accident.

In most departments of physics the *differences* alone of the *level values* play a determinative part. But temperature appears to share in common with chemical level the property that its level values are *per se* determinative. The fixed fusing-points, melting-points, boiling-points, critical temperatures, temperatures of combustion and dissociation, are obvious instances.

[1] See *The Open Court* for December, p. 738.

JOHN WESLEY POWELL.

IV. THE EXPLORER.

BY MRS. M. D. LINCOLN (BESSIE BEECH.)

[CONTINUED.]

PROFESSOR Powell saw in the parks and canyons of Colorado more than a mere training-school for students. Vast unexplored regions, hitherto represented on all maps by an utter blank, astonished and attracted him. He knew that through this unexplored territory must flow that great river, the Colorado of the West, unknown for much of its course to civilised man.

He had heard many wonderful stories from the Indians concerning the stupendous canyon. The Indians warned him not to enter this dreadful gorge; they considered it disobedience to the gods, and contempt for their authority, and declared that it would surely bring wrath and ruin on any who attempted it. The mysteries of the canyon were woven into the strange myths of their religion.

After finding that he understood their language and was a good friend to them, they persisted in their warning, and with much solemnity told him the following legend of a Numa chief:

"Long ago there was a great and wise chief who mourned the death of his wife, and would not be comforted until Ta-vwoats, one of the Indian gods, came to him and told him she was in a happier land, and offered to take him there that he might see for himself, if upon his return he would cease to mourn. The great chief promised. Then Ta-vwoats made a trail through the mountains that intervene between that beautiful land, the balmy region in the great West, and this the desert home of the poor Numa. The trail was the gorge of the Colorado. Through it he led him, and when they returned the deity exacted from the chief a promise that he would tell no one of the joys of that land, lest through discontent with the circumstances of this world, they should desire to go to

heaven. Then he rolled a river into the gorge, a mad raging stream that should engulf any who might attempt to enter thereby."

Despite all the warnings of the red men, on the 24th of May, 1869, the party of explorers launched their boats in the Green River, one of the largest tributaries of the Colorado. The boats were four in number; three were built of oak, staunch and firm, double-ribbed, with double stem- and stern-posts, and further strengthened by bulk-heads, dividing each into three compartments. Two of these were decked fore and aft, forming water-tight cabins which it was expected would buoy the boats should the waves roll over them in rough water. The little vessels were twenty-one feet long, and without cargo each could be carried by four men. The fourth boat was made of pine, very light, sixteen feet in length, with a sharp cut-water; this was built for fast rowing, and was divided into compartments like the others. They were fitted out with rations for ten months, all kinds of implements needed on a voyage, plenty of ammunition, and many scientific instruments.

Of that memorable expedition of four months in the canyons of the Colorado I can only give a glimpse.

The hero was never daunted. He had a fixed purpose, and was willing, if need be, to face death to accomplish something for science. Let us follow him and hear in his own words how the expedition was manned.

"J. C. Sumner and William H. Dunn are my boatmen in the 'Emma Dean'; then follows 'Kitty Clyde's Sister,' manned by W. H. Powell and G. T. Bradley; next the 'No Name,' with O. G. Howland, Seneca Howland, and Frank Goodman; and last comes the 'Maid of the Canyon' with W. R. Hawkins and Andrew Hall."[1]

The general course of the river is southward, and to the south is a great upland, the Uinta Mountains, lying athwart its course. Through this upland the river burrows in a series of deep canyons; and in these canyons the excitement and danger of the voyage begin.

"*May 30.*—This morning we are ready to enter the mysterious canyon, and start with some anxiety. The old mountaineers tell us that it cannot be run; the Indians say, 'Water heap catch 'em,' but all are eager for the trial, and off we go.

"Entering Flaming Gorge, we quickly run through it on a

[1] The full narrative of the voyage through the Colorado Canyons, from which these passages are extracted, is contained in *Exploration of the Colorado River of the West*, by J. W. Powell, Washington, 1875. A popular account of the voyage, likewise by Powell, appeared in *Scribner's Monthly* for January, February and March, 1875.

swift current and emerge into a little park. Half a mile below, the river wheels sharply to the left, and we turned into another canyon cut into the mountain. We enter the narrow passage. On either side the walls rapidly increase in altitude. On the left are overhanging ledges and cliffs five hundred—a thousand—fifteen hundred feet high.

"On the right, the rocks are broken and ragged, and the water fills the channel from cliff to cliff. Now the river turns abruptly around a point to the right, and the waters plunge swiftly down among great rocks; and here we have our first experience with canyon rapids. I stand up on the deck of my boat to seek a way among the wave-beaten rocks. All untried as we are with such waters, the moments are filled with intense anxiety. Soon our boats reach the swift current; a stroke or two, now on this side, now on that, and we thread the narrow passage with exhilarating velocity, mounting the high waves, whose foaming crests dash over us, and plunging into the troughs, until we reach the quiet water below; and then comes a feeling of great relief. Our first rapid is run. Another mile, and we come into the valley again.

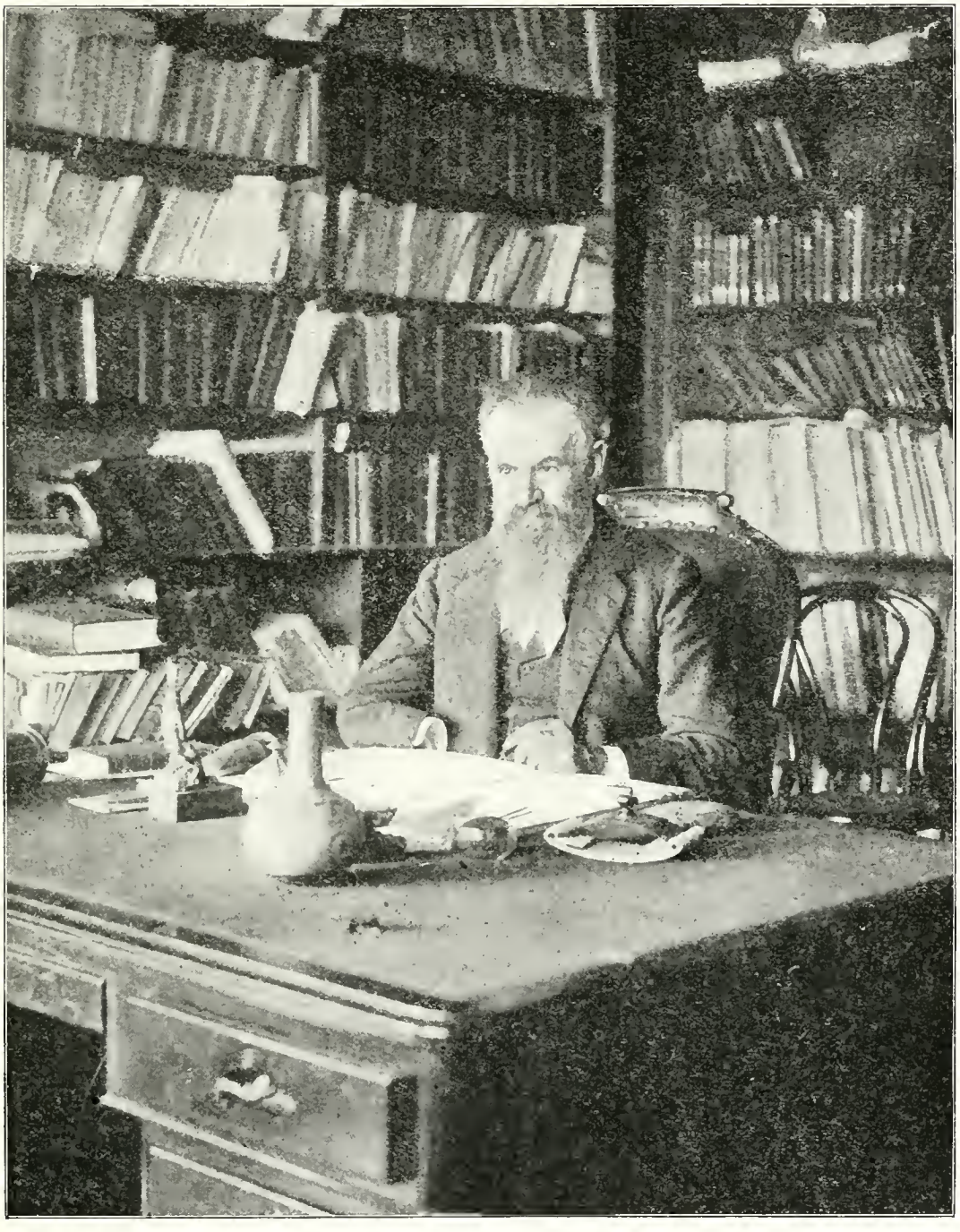
"Let me explain this canyon. Where the river turns to the left above, it takes a course directly into the mountain, penetrating to its very heart, then wheels back upon itself, and runs out into the valley from which it started only half a mile below the point at which it entered; so the canyon is in the form of an elongated letter U, with the apex in the center of the mountain. We name it Horseshoe Canyon."

For a week their course winds among foothills, with minor gorges and minor rapids, which prepare and train them for the grandeur and the danger that await them. At last they enter the heart of the mountain through the "Gate of Lodore."

"*June 8.*—We enter the canyon, and, until noon, find a succession of rapids, over which our boats have to be taken.

"Here I must explain our method of proceeding at such places. The 'Emma Dean' goes in advance; the other boats follow, in obedience to signals. When we approach a rapid, or what on other rivers would often be called a fall, I stand on deck to examine it, while the oarsmen back water, and we drift on as slowly as possible. If I can see a clear chute between the rocks, away we go; but if the channel is beset entirely across, we signal the other boats, pull to land, and I walk along the shore for closer examination. If this reveals no clear channel, hard work begins. We drop the boats to the very head of the dangerous place, and let them

over by lines, or make a portage, frequently carrying both boats and cargoes over the rocks, or, perhaps, only the cargoes, if it is safe to let the boats down.



MAJOR POWELL IN HIS OFFICE AT THE SMITHSONIAN INSTITUTION.[1]

"The waves caused by such falls in a river differ much from the waves of the sea. The water of an ocean wave merely rises and falls; the form only passes on, and form chases form unceasingly. A body floating on such waves merely rises and sinks—does

[1] After a photograph by Mr. De Lancey Gill.

not progress unless impelled by wind or some other power. But here, the water of the wave passes on, while the form remains. The waters plunge down ten or twenty feet, to the foot of a fall; spring up again in a great wave; then down and up, in a series of billows, that gradually disappear in the more quiet waters below; but these waves are always there, and you can stand above and count them.

"A boat riding such, leaps and plunges along with great velocity. Now, the difficulty in riding over these falls, when the rocks are out of the way, is in the first wave at the foot. This will sometimes gather for a moment, heaping up higher and higher, until it breaks back. If the boat strikes it the instant after it breaks, she cuts through, and the mad breaker dashes its spray over the boat, and would wash us overboard did we not cling tight. If the boat, in going over the falls, chances to get caught in some side current, and is turned from its course, so as to strike the wave 'broadside on,' and the wave breaks at the same instant, the boat is capsised. Still, we must cling to her, for, the water-tight compartments acting as buoys, she cannot sink; and so we go, dragged through the waves, until still waters are reached. We then right the boat, and climb aboard. We have several such experiences to-day.

"At night, we camp on the right bank, on a little shelving rock, between the river and the foot of the cliff; and with night comes gloom into these great depths.

"After supper, we sit by our camp fire, made of driftwood caught by the rocks, and tell stories of wild life; for the men have seen such in the mountains, or on the plains, and on the battle-fields of the South. It is late before we spread our blankets on the beach."

In another rapid the 'No Name' is wrecked, much of her cargo is lost, and her crew for a time are in great peril.

"During the afternoon [June 15] we run down, three-quarters of a mile, on quiet water, and land at the head of another fall. On examination, we find that there is an abrupt plunge of a few feet, and then the river tumbles, for half a mile, with a descent of a hundred feet, in a channel beset with great numbers of huge boulders. This stretch of the river is named Hell's Half-Mile.

"The remaining portion of the day is occupied in making a trail among the rocks to the foot of the rapid.

"*June 16.*—Our first work this morning is to carry our cargoes to the foot of the falls. Then we commence letting down the boats. We take two of them down in safety, but not without great

difficulty; for, where such a vast body of water, rolling down an inclined plane, is broken into eddies and cross currents by rocks projecting from the cliffs and piles of boulders in the channel, it requires excessive labor and much care to prevent their being dashed against the rocks or breaking away. Sometimes we are

MAJOR POWELL WITH HIS HORSE ON AN OUTING IN THE SURROUNDINGS OF WASHINGTON, D. C.

compelled to hold the boat against a rock, above a chute, until a second line, attached to the stem, is carried to some point below, and, when all is ready, the first line is detached, and the boat given to the current, when she shoots down, and the men below swing her into some eddy.

"At such a place, we are letting down the last boat, and, as she is set free, a wave turns her broadside down the stream, with the stem, to which the line is attached, from shore and a little up. They haul on the line to bring the boat in, but the power of the current, striking obliquely against her, shoots her out into the middle of the river. The men have their hands burned with the friction of the passing line; the boat breaks away, and speeds, with great velocity, down the stream.

"The 'Maid of the Canyon' is lost, so it seems; but she drifts some distance and swings into an eddy, in which she spins about, until we arrive with the small boat and rescue her."

Ten days of hard work bring them to the south base of the Uinta Mountains, but they are still among canyons, and the river is still swift and difficult. They are in the Plateau Province, where the uplands are tables, flat or sloping, bounded by cliffs, and adorned by buttresses and pinnacles. Among these the Green River is joined by the Grand, to make the Colorado. The whole narrative is a tale of adventure; each successive canyon gives a new type of scenery; each climbing of a canyon wall reveals a new wonderland; each roaring rapid yields a new problem in navigation. At last, near the middle of August, the Grand Canyon is reached, and all phases of the journey—the labor and peril, the beauty and grandeur, and the scientific interest—find their superlative expression.

"About eleven o'clock [August 14] we hear a great roar ahead, and approach it very cautiously. The sound grows louder and louder as we run, and at last we find ourselves above a long, broken fall, with ledges and pinnacles of rock obstructing the river. There is a descent of, perhaps, seventy-five or eighty feet in a third of a mile, and the rushing waters break into great waves on the rocks, and lash themselves into a mad, white foam. We can land just above, but there is no foot-hold on either side by which we can make a portage. It is nearly a thousand feet to the top of the granite, so it will be impossible to carry our boats around, though we can climb to the summit up a side gulch, and, passing along a mile or two, can descend to the river. This we find on examination; but such a portage would be impracticable for us, and we must run the rapid, or abandon the river. There is no hesitation. We step into our boats, push off and away we go, first on smooth but swift water, then we strike a glassy wave, and ride to its top, down again into the trough, up again on a higher wave, and down and up on waves higher and still higher, until we strike one just as it curls

back, and a breaker rolls over our little boat. Still, on we speed, shooting past projecting rocks, till the little boat is caught in a whirlpool, and spun around several times. At last we pull out again into the stream, and now the other boats have passed us. The open compartment of the 'Emma Dean' is filled with water, and every breaker rolls over us. Hurled back from a rock, now on this side, now on that, we are carried into an eddy, in which we struggle for a few minutes, and are then out again, the breakers still rolling over us. Our boat is unmanageable, but she cannot sink, and we drift down another hundred yards, through breakers; how, we scarcely know. We find the other boats have turned into an eddy at the foot of the fall, and are waiting to catch us as we come, for the men have seen that our boat is swamped. They push out as we come near, and pull us in against the wall. We bail our boat, and on we go again.

"The walls, now, are more than a mile in height—a vertical distance difficult to appreciate. Stand on the south steps of the Treasury building, in Washington, and look down Pennsylvania Avenue to the Capitol Park, and measure this distance overhead, and imagine cliffs to extend to that altitude, and you will understand what I mean; or, stand at Canal street, in New York, and look up Broadway to Grace Church, and you have about the distance; or, stand at Lake street bridge, in Chicago, and look down to the Central Depot, and you have it again.

"A thousand feet of this is up through granite crags, then steep slopes and perpendicular cliffs rise, one above another, to the summit. The gorge is black and narrow below, red and gray and flaring above, with crags and angular projections on the walls, which, cut in many places by side canyons, seem to be a vast wilderness of rocks. Down in these grand, gloomy depths we glide, ever listening, for the mad waters keep up their roar; ever watching, ever peering ahead, for the narrow canyon is winding, and the river is closed in so that we can see but a few hundred yards, and what there may be below we know not; but we listen for falls, and watch for rocks, or stop now and then, in the bay of a recess, to admire the gigantic scenery. And ever, as we go, there is some new pinnacle or tower, some crag or peak, some distant view of the upper plateau, some strange shaped rock, or some deep, narrow side canyon."

After some days a rapid is reached of such formidable character that nearly a day is spent in climbing the walls to study it.

"I decide that it is possible to let down over the first fall, then

run near the right cliff to a point just above the second, where we can pull out into a little chute, and, having run over that in safety, we must pull with all our power across the stream, to avoid the

THE LATE MAJOR POWELL.[1]

great rock below. On my return to the boat, I announce to the men that we are to run it in the morning.

"After supper Captain Howland asks to have a talk with me.

[1] A recent portrait taken by Mr. De Lancey Gill, the Art Photographer of the Smithsonian Institution.

We walk up the little creek a short distance, and I soon find that his object is to remonstrate against my determination to proceed. He thinks that we had better abandon the river here. Talking with him, I learn that his brother, William Dunn, and himself have determined to go no farther in the boats. So we return to camp. Nothing is said to the other men.

"For the last two days, our course has not been plotted. I sit down and do this now, for the purpose of finding where we are by dead reckoning. It is a clear night, and I take out the sextant to make observation for latitude, and find that the astronomic determination agrees very nearly with that of the plot—quite as closely as might be expected, from a meridian observation on a planet. In a direct line, we must be about forty-five miles from the mouth of the Rio Virgen. If we can reach that point, we know that there are settlements up that river about twenty miles. This forty-five miles, in a direct line, will probably be eighty or ninety in the meandering line of the river. But then we know that there is comparatively open country for many miles above the mouth of the Virgen, which is our point of destination.

"As soon as I determine all this, I spread my plot on the sand, and wake Howland, who is sleeping down by the river, and show him where I suppose we are, and where several Mormon settlements are situated.

"We have another short talk about the morrow, and he lies down again; but for me there is no sleep. All night long, I pace up and down a little path, on a few yards of sand beach, along by the river. Is it wise to go on? I go to the boats again, to look at our rations. I feel satisfied that we can get over the danger immediately before us; what there may be below I know not. From our outlook yesterday, on the cliffs, the canyon seemed to make another great bend to the south, and this, from our experience heretofore, means more and higher granite walls. I am not sure that we can climb out of the canyon here, and, when at the top of the wall, I know enough of the country to be certain that it is a desert of rock and sand, between this and the nearest Mormon town, which, on the most direct line, must be seventy-five miles away. True, the late rains have been favorable to us, should we go out, for the probabilities are that we shall find water still standing in holes, and, at one time, I almost conclude to leave the river. But for years I have been contemplating this trip. To leave the exploration unfinished, to say that there is a part of the canyon

which I cannot explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on.

"I wake my brother, and tell him of Howland's determination, and he promises to stay with me; then I call up Hawkins, the cook, and he makes a like promise; then Sumner, and Bradley, and Hall, and they all agree to go on.

"*August 28.*—At last daylight comes, and we have breakfast, without a word being said about the future. The meal is as solemn as a funeral. After breakfast, I ask the three men if they still think it best to leave us. The elder Howland thinks it is, and Dunn agrees with him. The younger Howland tries to persuade them to go with the party, failing in which, he decides to go with his brother."

So the party is divided. Powell leaves a boat behind, for use of the three men if they fail to scale the cliff, and then successfully runs the rapid. Fortunately no other serious difficulty is encountered, and in the forenoon of the following day the two boats glide at last from between the gloomy walls into the broad daylight of an open valley. The weary river, as though sharing the joy and relief of the explorers, spreads out its unhampered waters, to bask and loiter in the sun.

The adventurous voyage is ended.

* * *

The three men who climbed the canyon wall and thus escaped the dangers of the river, ran unwittingly into still greater peril and never reached the settlements. Their story was not fully known until the autumn of the following year, when Professor Powell encamped with a band of Plateau Indians, the Kai'-vav-its, was visited by Indians of another band, the Shi'-vwitz.

"This evening, the Shi'-vwitz, for whom we have sent, come in, and, after supper, we hold a long council. A blazing fire is built, and around this we sit—the Indians living here, the Shi'-vwits, Jacob Hamblin, and myself. Hamblin speaks their language well, and has a great influence over all the Indians in the region round about. He is a silent, reserved man, and when he speaks it is in a low, quiet way that inspires great awe. His talk is so low that they must listen attentively to hear, and they sit around him in deathlike silence. When he finishes a measured sentence, the chief repeats it, and they all give a solemn grunt. But, first, I fill my pipe, light it, and take a few whiffs, then pass it to Hamblin; he smokes, and gives it to the man next, and so it goes around. When it has passed the chief, he takes out his own pipe,

fills, and lights it, and passes it around after mine. I can smoke my own pipe in turn, but when the Indian pipe comes around I am nonplussed. It has a large stem, which has, at some time, been broken, and now there is a buckskin rag wound around it, and tied with sinew, so that the end of the stem is a huge mouthful, and looks like the burying ground of old dead spittle, venerable for a century. To gain time, I refill it, then engage in very earnest conversation, and, all unawares, I pass it to my neighbor unlighted.

"I tell the Indians that I wish to spend some months in their country during the coming year, and that I would like them to treat me as a friend. I do not wish to trade; do not want their lands. Heretofore I have found it very difficult to make the natives understand my object, but the gravity of the Mormon missionary helps me much. I tell them that all the great and good white men are anxious to know very many things; that they spend much time in learning, and that the greatest man is he who knows the most. They want to know all about the mountains and the valleys, the rivers and the canyons, the beasts, and birds, and snakes. Then I tell them of many Indian tribes, and where they live; of the European nations; of the Chinese, of Africans, and all the strange things about them that come to my mind. I tell them of the ocean, of great rivers and high mountains, of strange beasts and birds. At last I tell them I wish to learn about their canyons and mountains, and about themselves, to tell other men at home; and that I want to take pictures of everything, and show them to my friends. All this occupied much time, and the matter and manner made a deep impression.

"Then their chief replies: 'Your talk is good, and we believe what you say. We believe in Jacob, and look upon you as a father. When you are hungry, you may have our game. You may gather our sweet fruits. We will give you food when you come to our land. We will show you the springs, and you may drink; the water is good. We will be friends, and when you come we will be glad. We will tell the Indians who live on the other side of the great river that we have seen you, and you are the Indians' friend. We will tell them you are Jacob's friend. We are very poor. Look at our women and children; they are naked. We have no horses; we climb the rocks, and our feet are sore. We live among rocks, and they yield little food and many thorns. When the cold moons come, our children are hungry. We have not much to give; you must not think us mean. You are wise; we have heard you tell strange things. We are ignorant. Last year we killed three white

men. Bad men said they were our enemies. They told great lies. We thought them true. We were mad; it made us big fools. We are very sorry. Do not think of them, it is done; let us be friends. We are ignorant—like little children in understanding compared with you. When we do wrong, do not get mad, and be like children too.

"'When white men kill our people, we kill them. Then they kill more of us. It is not good. We hear that the white men are a great number. When they stop killing us, there will be no Indian left to bury the dead. We love our country; we know not other lands. We hear that other lands are better; we do not know. The pines sing, and we are glad. Our children play in the warm sand; we hear them sing, and are glad. The seeds ripen, and we have to eat, and we are glad. We do not want their good lands; we want our rocks, and the great mountains where our fathers lived. We are very poor; we are very ignorant; but we are very honest. You have horses and many things. You are very wise; you have a good heart. We will be friends. Nothing more have I to say.'

"Mr. Hamblin fell into conversation with one of them, and held him until the others had left, and then learned more of the particulars of the death of the three men. They came upon the Indian village almost starved and exhausted with fatigue. They were supplied with food, and put on their way to the settlements. Shortly after they had left, an Indian from the east side of the Colorado arrived at their village, and told them about a number of miners having killed a squaw in a drunken brawl, and no doubt these were the men. No person had ever come down the canyon; that was impossible; they were trying to hide their guilt. In this way he worked them into a great rage. They followed, surrounded the men in ambush, and filled them full of arrows."

(TO BE CONTINUED.)

MISCELLANEOUS.

THE FRENCH COLONIES IN CHINA.

To the Editor of The Open Court:

I am just arrived from Hanoi, in Tonkin, French Indo-China, where I have been attending the exhibition and the Congrès International des Orientalistes. I went there ignorant of what the French have been doing of late years. When I was in command on the coast of China, etc., just forty years ago, I avoided the near approach to the land on account of pirates, being under sail alone. The "Flying Fish" had guns, but I could not depend upon the native crew and passengers, when under the Siamese flag.

Everything I saw and learned came as a surprise to me. Considering the difficulties encountered during the past twenty years, since the French determined to force open the Red River, and that it has only been quite recently determined upon to make Hanoi the seat of government, it is simply astonishing what has been achieved. A magnificent capital for the Franco-Indo-China Colonial Empire in the extreme Orient has been raised up; and no half measures. Everything is "up to date." Electric trams to the suburbs, and on the principle thoroughfares. Electric lighting, water works, sanitation, drainage, wide boulevards well macadamised (steam rollers used). Shade trees along the sidewalks. Clean and tidy everywhere. No unsavory smells or unpleasant sights. All natives well clad and clean, evidently prospering, contented and happy under the régime of the conquering race.

The Chinese were persistent in encouraging opposition to the French occupation, and hordes of ruffians were sent into Tonkin from the southern frontiers of China. The subjection of the country was only achieved after hard fighting; and severe reverses showed the seriousness and magnitude of the task. Then the restoration of law and order and the suppression of piracy and brigandage had to be undertaken.

The French recognise the bravery of the enemy; and having—by their valor—made themselves masters of the country, they exhibit their magnanimity by treating the natives and all comers, indigenous and Chinese, with consideration, aye and with courtesy. It is a contrast to Yankee and Japanese conduct, and the French are giving others also, including the British and Dutch, object lessons in governing Asiatics that they have conquered.

The Exhibition is doing what it was intended to. The buildings are very solid, and are to be permanently utilised as headquarters for the education of military and civil officials to govern the natives, to exploit the natural resources of the coun-

try. At one colliery on the coast three hundred thousand tons of briquets were shipped. Mines, plantations, and industries are working.

The indigenes are employed everywhere; and a large number of the pick of the natives are troops, police, railway station-masters and employees. In the public offices the natives hold responsible positions. The value of native labor has become enhanced, as well as prices for products; and new productions are being developed. The indigenes are protected from outlaws; life and property are safe, and justice ably administered. In the excursions, we visitors had cause to be satisfied that the French had "Come to stay."

The native head-men came to meet us, and all the denizens of the country side flocked to gaze upon the visitors. Festive flags were displayed by the peasantry and town folk, and we were served with refreshments in the large temples and village assembly halls.

I visited a number of the temples, and the bonzes performed ceremonies and read the Buddhist scriptures. I took with me some of the vestments given me by the Japanese Cathedrals (Dai Hon Zan). Thus there were opportunities for my seeing the natives. Early every morning I went to the markets—of which there are a number—and purchased fruits and flowers. The cafés not being opened until late, I had a morning meal of fruit, bread, and light wine; then took the electric tram and visited the temples, returning in time for the Congress meetings. The exhibits at the Exhibition illustrated what is being done, and the past efforts as well as future projects to exploit the Colonies. It was altogether a delightful trip.

KOBE, JAPAN, Jan. 8, 1903. C. PFOUNDES.

NEW BOOKS ON SHAKESPEARE.

Three important books on the greatest figure of English literature have come to our notice within the last year. They are: (1) *William Shakespeare, Poet, Man, and Dramatist*, by Mr. Hamilton Wright Mabie;[1] (2) *What is Shakespeare? An Introduction to the Great Plays*,[2] by L. A. Sherman, Professor in the University of Nebraska; and (3) *Shakespeare's Portrayal of the Moral Life*,[3] by Frank Chapman Sharp, Assistant Professor of Philosophy in the University of Wisconsin.

The last-named work will receive more detailed consideration in *The Monist*, as it is rather of a scientific than a literary character, laying special emphasis on its treatment of Shakespeare's criminals,—a subject which it presents in the light of modern criminal psychology.

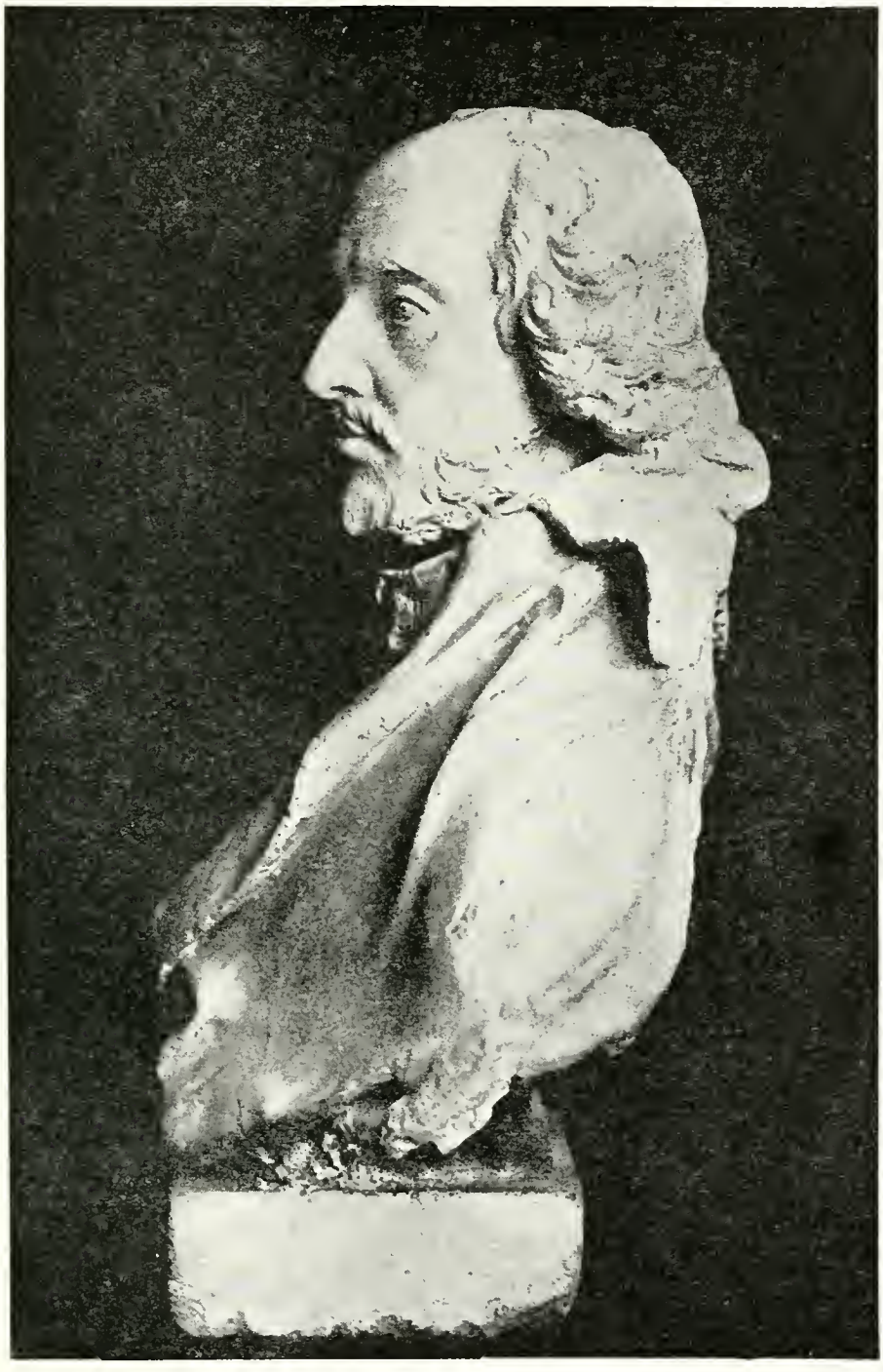
Professor Sherman's work is a practical book written "in order to aid those who would be glad to read Shakespeare and like authors more confidently and completely." And he approaches his task, in our opinion, in the right spirit and with the right method, giving a running analysis of several plays of the type of Cymbeline (supposed to accompany the reading of the play) and studying in later chapters more general topics. It is a book for persons taking up Shakespeare with the serious purpose of learning to read his works with enjoyment, and of deriving from them the full intellectual and literary profit which they are capable of imparting. Vast as the sale and distribution of Shakespeare's works are, knowledge

1 With One Hundred Illustrations, including Nine Photogravures. New York: The Macmillan Co. Pp., 421. Price, $3.50 net.

2 New York: The Macmillan Co. Pp., 414. Price, $1.50, net.

3 New York: Charles Scribner's Sons. Pp., 232. Price, $1.25. net.

of him lags, and one of the reasons for this is, in Professor Sherman's opinion, the fact that the great public is not educated to his level or is perhaps largely unconscious of being so educated. To help bring about this consummation is his desire.

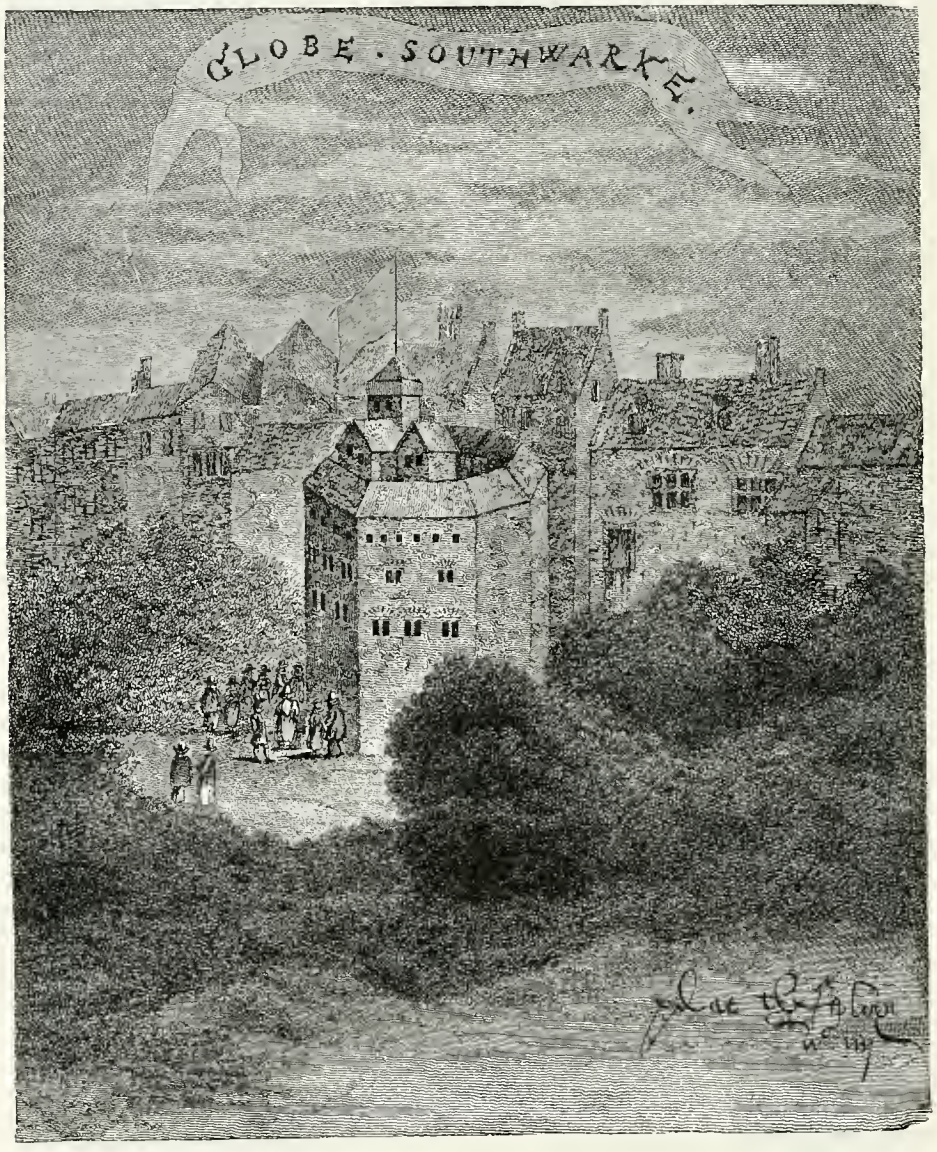


THE "BLACK BUST" OF SHAKESPEARE.

From a plaster cast of the original terra-cotta bust owned by the Garrick Club, London. (Mabie's *Shakespeare*.)

Mr. Mabie's book is one of distinct literary merit, great sympathy with his subject, and wide intellectual compass. It is truly the book for the lover of Shakespeare. It makes his life and times stand out for us with a vividness that could

hardly be rivalled. Shakespeare's moral, literary, and political environment; the England and Europe of his day; his Stratford-on-Avon and his London; his friends and his great contemporaries,—all are portrayed with rare charm and fidelity. The illustrations, which include the delicate photogravures of Shakespeare's home by A. W. Elson & Co. of Boston, are one hundred in number and very complete in scope. Everything pertaining to Shakespeare and the life of the England

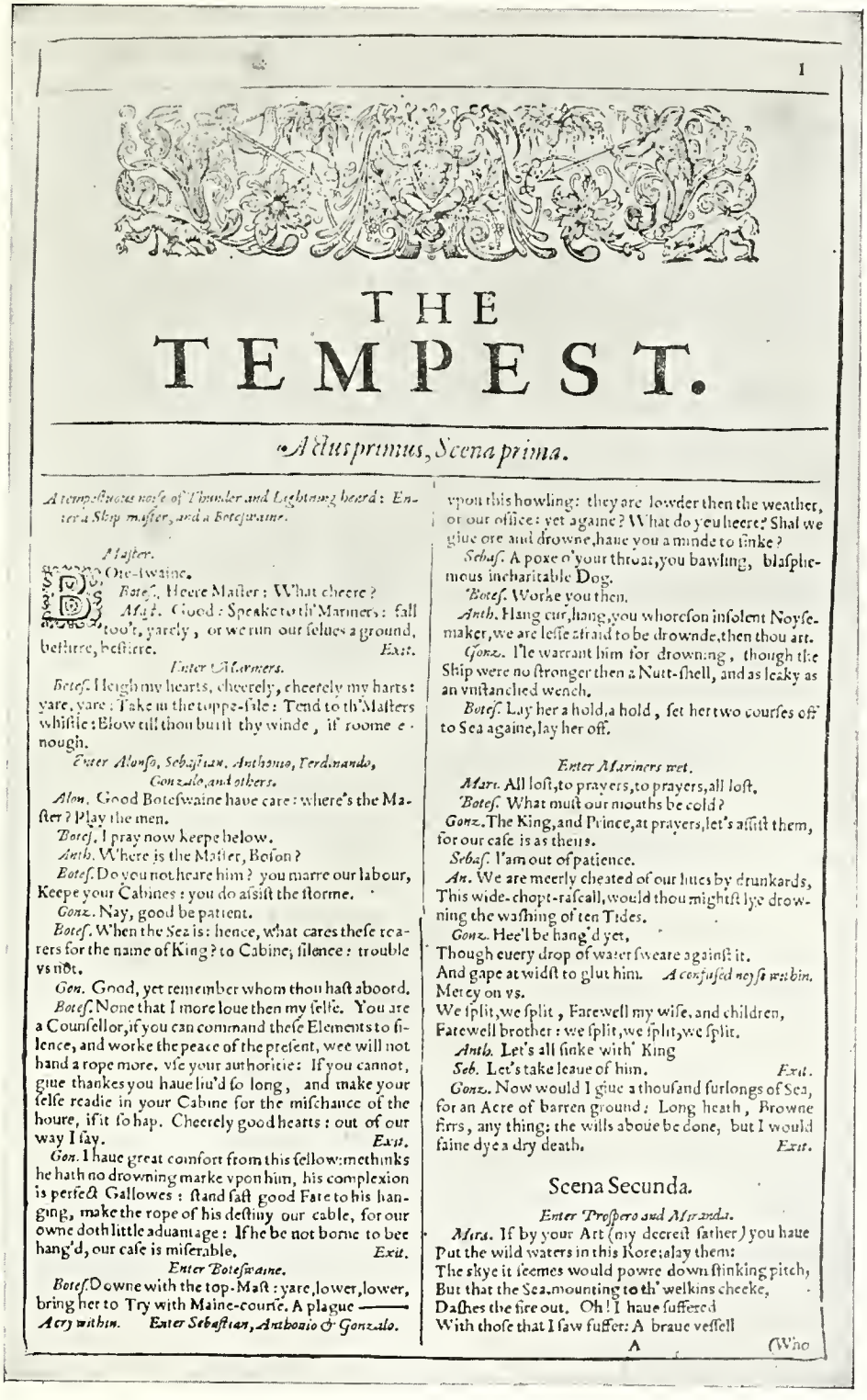


THE GLOBE THEATRE, SOUTHWARK. THE SCENE OF SHAKESPEARE'S GREATEST TRIUMPHS.

From a drawing in the illustrated edition of *Pennant's London*, in the British Museum (Mabie's *Shakespeare*).

of his time is represented, making this feature of the volume a rare possession in itself; three of these illustrations we are able by the courtesy of the publishers to reproduce. But the pictorial and descriptive side of Mr. Mabie's performance is not its sole merit. He has also furnished us with much that is valuable in criticism and appreciation, thus rendering admirers of the bard of Avon doubly indebted to him.

The precise nature of Mr. Mabie's work is best characterised in his own words. It was prepared, he says, "with the hope that it may bring the greatest



1

THE
TEMPEST.

Actus primus, Scena prima.

A tempestuous noise of Thunder and Lightning heard: Enter a Ship-master, and a Boteswaine.

Master.

One-ſwaine.

Bote. Heere Maſter: What cheere?

Mast. Good: Speake to th'Mariners: fall too't, yarely, or we run our ſelues a ground, beſtirre, beſtirre. *Exit.*

Enter Mariners.

Bote. Heigh my hearts, cheerely, cheerely my harts: yare, yare: Take in the toppe-ſile: Tend to th'Maſters whiſtle: Blow till thou burſt thy winde, if roome enough.

Enter Alonſo, Sebaſtian, Anthonio, Ferdinando, Gonzalo, and others.

Alon. Good Boteſwaine haue care: where's the Maſter? Play the men.

Bote. I pray now keepe below.

Anth. Where is the Maſter, Boſon?

Bote. Do you not heare him? you marre our labour, Keepe your Cabines: you do aſsiſt the ſtorme.

Gonz. Nay, good be patient.

Bote. When the Sea is: hence, what cares theſe roarers for the name of King? to Cabine; ſilence: trouble vs not.

Gon. Good, yet remember whom thou haſt aboord.

Bote. None that I more loue then my ſelfe. You are a Counſellor, if you can command theſe Elements to ſilence, and worke the peace of the preſent, wee will not hand a rope more, vſe your authoritie: If you cannot, giue thankes you haue liu'd ſo long, and make your ſelfe readie in your Cabine for the miſchance of the houre, if it ſo hap. Cheerely good hearts: out of our way I ſay. *Exit.*

Gon. I haue great comfort from this fellow: methinks he hath no drowning marke vpon him, his complexion is perfect Gallowes: ſtand faſt good Fate to his hanging, make the rope of his deſtiny our cable, for our owne doth little aduantage: If he be not borne to bee hang'd, our caſe is miſerable. *Exit.*

Enter Boteswaine.

Bote. Downe with the top-Maſt: yare, lower, lower, bring her to Try with Maine-courſe. A plague ——— *A cry within.* *Enter Sebaſtian, Anthonio & Gonzalo.*

vpon this howling: they are lowder then the weather, or our office: yet againe? What do ye heere? Shal we giue ore and drowne, haue you a minde to ſinke?

Sebaſ. A poxe o'your throat, you bawling, blaſphemous incharitable Dog.

Bote. Worke you then.

Anth. Hang cur, hang, you whoreſon inſolent Noyſemaker, we are leſſe afraid to be drownde, then thou art.

Gonz. I'le warrant him for drowning, though the Ship were no ſtronger then a Nutt-ſhell, and as leaky as an vnſtanched wench.

Bote. Lay her a hold, a hold, ſet her two courſes off to Sea againe, lay her off.

Enter Mariners wet.

Mari. All loſt, to prayers, to prayers, all loſt.

Bote. What muſt our mouths be cold?

Gonz. The King, and Prince, at prayers, let's aſſiſt them, for our caſe is as theirs.

Sebaſ. I am out of patience.

An. We are meerly cheated of our liues by drunkards, This wide-chopt-raſcall, would thou might'ſt lye drowning the waſhing of ten Tides.

Gonz. Hee'l be hang'd yet,
Though euery drop of water ſweare againſt it.
And gape at widſt to glut him. *A confuſed noyſe within.*
Mercy on vs.
We ſplit, we ſplit, Farewell my wife, and children,
Farewell brother: we ſplit, we ſplit, we ſplit.

Anth. Let's all ſinke with' King

Seb. Let's take leaue of him. *Exit.*

Gonz. Now would I giue a thouſand furlongs of Sea, for an Acre of barren ground: Long heath, Browne firrs, any thing: the wills aboue be done, but I would faine dye a dry death. *Exit.*

Scena Secunda.

Enter Proſpero and Miranda.

Mira. If by your Art (my deereſt father) you haue
Put the wild waters in this Roare; alay them:
The skye it ſeemes would powre down ſtinking pitch,
But that the Sea, mounting to th' welkins cheeke,
Daſhes the fire out. Oh! I haue ſuffered
With thoſe that I ſaw ſuffer: A braue veſſell

A (Who

FACSIMILE OF THE TITLE-PAGE OF THE FIRST FOLIO EDITION OF SHAKESPEARE'S "TEMPEST." (Mabie's *Shakespeare.*)

of English poets more distinctly before the minds of some of his readers, and widen the interest in a body of poetry rich beyond most literature in the qualities

which not only give deep and fresh interest to life, but which make for the liberation and enrichment of the human spirit. As the Spokesman of a race to which has fallen a large share of the government of the modern world, and as the chief exponent in literature of the fundamental conception of life held by the Western world at a time when the thought of the East and the West are being brought into searching comparison, Shakespeare must be studied in the near future with a deeper recognition of the significance of his work and its value as a source of spiritual culture. In these chapters the endeavor has been made to present the man as he is disclosed by the results of the long and loving study of a group of scholars, chiefly English, German, and American, who have searched the whole field of contemporary literature, records, and history with infinite patience and with keen intelligence, by the history of his time, and by a study of his work. The plays have been presented in those aspects which throw light on the dramatist's life, thought, and art; the many and interesting questions which have been discussed with great ingenuity and at great length by Shakespearian scholars have been touched upon only as they directly affect the history, thought, or art of the poet." μ.

A POMPEIIAN MOSAIC.

THE OLDEST RELIC OF THE ORIGINAL CHRIST-MYSTERIES.

To the Editor of The Open Court:

This mosaic which many years ago was found in "the tanner's house" in Pompeii is now in the Museo Nazionale at Naples, under the name of *Cranio Umano* (No. 109982); accordingly, it dates back *nearly to the time of Christ*—Pompeii was destroyed in the year 79 of our era. The ideas that may be expressed by the figures of this mosaic are, consequently, also from the time of Christ—which must be considered interesting at all events. (See accompanying cut.)

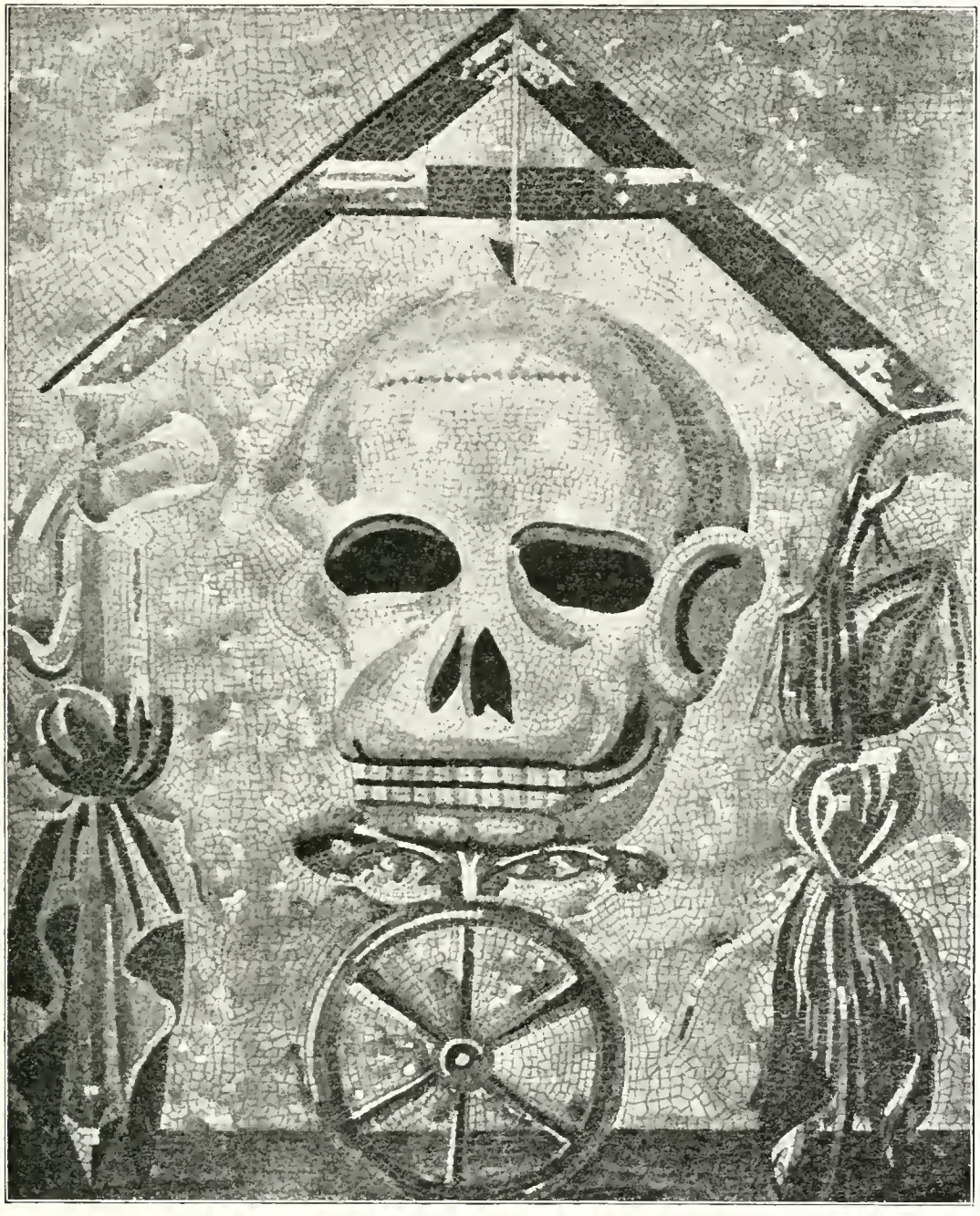
The central and dominating figure of the mosaic is a skull in which two peculiarities are noticeable: a large left ear, and indications of eyes in the dark eyeholes. To the right of the skull are a ragged mantle, a staff and scrip; to the left there are a knight's mantle, a lance and scarp. Above the skull is a level and under it a butterfly above the wheel of time (an Egyptian symbol).

These figures appear to be a "key of life," since they give a clear description of the way to the goal of early life (which goal is called, incorrectly, "salvation"), —a true statement of the development that alone can carry man to the next step of the ladder of evolution. Here let us consider some of the ideas that can be found in our mosaic.

The *wander* symbols say: If man is to reach the goal of life, then he must turn away from the animal, sensual life, leaving the ways of the low life. The symbol of *Death*: during this wandering the low attributes of his nature—the animal remnants—will lose life. The *knight's* symbols: as, by and by, the animal nature disappears, so a new nature, that of the "God-Man," will appear; and as a "knight"—i. e., as a ruler of the animal!—this man will, aided by divine powers, conquer "the land of the fathers," i. e., *realise the union with God*. The *building* symbol indicates that this development is a slow process, as the placing of stone upon stone when a house is erected. The symbol of *new life* (the butterfly) means that this process is a natural process, as natural as the resurrection of the butterfly in its "fullness of time." Finally, the symbol of *time* is interpreted to

mean that this development *is to be realised here*, while the wheel of time is rolling on, and before the death of the physical body.

These ideas of wandering, of building, of knights' contests, of new life through death, are entirely Christian, and it seems strange that this was not understood long ago; the reason may be that the "Christianism" which, principally, tries to



Pompeiian Mosaic.

avoid the punishment of sins (i. e., to *avoid being educated by the perfect Father*) —that "Christianism" cannot maintain the old ideal: "Be ye perfect, as your Father in the heavens is perfect," Matth. v. 48.

Behold! According to the Gospels the Christian is a *wanderer*: he wanders from earth to heaven, from darkness to light—from Egypt to Canaan (compare

St. Paul). Following after the Christ, upon *via dolorosa*, does he seek *Death* for "the old man who is corrupted by delusive lusts." He is *building*, working at the inner temple of God (St. Paul), and "he builds his house upon a rock." He is a *knight*: doubly powerful, as he is the ruler of the animal, does he struggle incessantly with the enemies that would prevent him from living in "the land of the fathers";—and you remember how St. Paul (in Eph. vi.) describes the "full panoply of God" in which the Christos-knight is to be invested. He seeks *the new life*, that of regeneration, the resurrection of the butterfly[1] from the chrysalis state. And behold, how *the Gospels explain to us the left ear and the eyes of the skull:* Man wandering upon the way of Death, will hear the voice of truth, "and understand by the heart" (the *left* ear, therefore), and he will see the perfect light. The *wheel of time*, finally, is also, in the spiritual meaning, an essential symbol of original Christianity:

"I must work....*while it is day. Night cometh, when no man can work.*" John ix. 4.

But, some one may say, the mosaic contains no *allusion to Jesus Christ.* It does—it has two! The level has the shape of an A—which shape was not necessary at all!—, and the wheel contains an O. Should not this be A and O, "*Alpha and Omega,*" which is one of the names of the Christ (Revelation i. 8 and xxii. 13)? And in the wheel of time we find the figure ✳ which is the *very oldest sign for* "*Jesus Christ,*" i. e., the Latin I, and the Greek X; and this combination of Latin and Greek is even characteristic for the time of transition called "the time of Christ."

At the excavation of Pompeii, we have been told, there was found upon a wall the following inscription:

"*Rejoice in the fire, Christians.*"

This inscription has been taken as mockery at the Christians; but the meaning may very well be quite another. For the primitive Christians were struggling for perfection "like that of the heavenly Father"; therefore they rejoiced in the fire, in *the fire of purification*—this may be the reason why the background of our mosaic has the green color of hope.

* * *

The possible meaning of *the colors* of the mosaic may also be worth considering. Several utterances of the Revelation (for instance, iii. 4, ii. 17, vi. 6, xii. 3) together with the extensive color-symbolism, still to be found—although often misshapen and misunderstood—in the Roman Church, make it evident also that *the primitive Christ-Mysteries used colors as signs for certain ideas.* And this must be considered quite natural; for *light* is the only medium of messages from heaven to earth and it is, therefore, the natural symbol of *perfect truth*, coming from God; and the various modifications of the light, called *colors*, which are produced by its "refraction" by earthly things, correspond naturally with *the modifications of perfect truth*, produced through its "refraction" by terrestrial matters.

The white light can be decomposed, you know, into *Red*, *Yellow*, and *Blue.* This can also be taken spiritually: man cannot comprehend the divine "uncolored," truth; and she modifies herself for his sake as *Love*, *Wisdom*, and *Strength* —or however we are to name this divine trinity and unity. Possibly the key of color symbolism of our fathers might be this:

[1] The Greek word *Psyche* (used, for instance, in Joh. xii. 25) means "soul" and—"butterfly"!

Red is the symbol of *Love*.
Yellow is the symbol of *Wisdom*.
Blue is the symbol of *Strength*.

Probably our fathers, who were "guileless as doves," have thought as follows: man's blood is *red*, because his life emanated from divine love. The red sky of morning and evening tells us that the love of God is the beginning and end of all things—and when young folks use a red pink to say: "I love thee!" then that is most profound, indeed! The gold is *yellow*, because it is the symbol of perfect wisdom, which "rust cannot devour"; and when the sky is *blue*, it is to tell man about the almighty God who "made the expanse in the midst of the waters," with its numberless dwellings.

Certainly there is a deep meaning in the tale of the *rainbow* that was set in the clouds as a sign of God's covenant with man: according to his love, wisdom, and power, He will no more destroy man by flood, but lead him to the goal—even if the way be long. Also in accordance with this the *High Priest* (Num. viii. 7) seems to be invested. The inner dress was "fine linen," which indicates: white; the outer garments and ornaments were "gold, blue, purple, and scarlet," accordingly the three primary colors. When we assume that the high priest represents the perfect ego in man, the *God-Man*, then we shall easily comprehend why he was to be dressed in that manner.

The three primitive colors produce three mixed colors: *Reddish-yellow*, *Green*, *Violet*. Also these colors have, apparently, a natural-symbolical signification. The flame of the altar of sacrifice is *reddish-yellow*: it is love and wisdom that, united, teach man to sacrifice the animal, i. e., his own animal nature, upon the altar. The *green* color (union of blue and yellow) is the color of hope: when man has wisdom to see the activity in the universe of the divine power, then hope is born in him. "Friendship is *violet*," they say, and that is quite correct; for as red and blue make violet, so is true friendship the union of love and strength. How significantly did necessity put in order the colors of the rainbow: red, orange, yellow, green, blue, violet, i. e., love, sacrifice, wisdom, hope, strength, friendship; for love causes sacrifice, sacrifice will bear wisdom, from wisdom hope emanates, hope gives strength—and strength will lift man into "*the friendship of God, which will take man to the highest summit of blessedness*" (Philo) and is, therefore, the *last aim of life*. How do we wish men to understand this simple truth: *man's eye can sense only a few of the violet rays!*

Nearly so our good fathers may have conceived the basis of color-symbolism; and we dare not forget that men long before "the time of Christ" knew this truth: 'As below, so above" (Hermes Trismegistus), which says that the cause of all that *is* and *happens* in the physical world is something that is and happens in the psychical world.

And now we return to our mosaic, whose colors it will not be difficult to explain.

The *Skull* is gray: a mixture of the colors of Perfection and Death. This is quite right; for man's wandering through the desert of purification has only one purpose: to separate that which is eternal from the imperfect and transitory with which it has been mixed. The *wandering* symbols are grayish; for they belong to him that is upon the way of death. The mantle, however, is more red, the staff more yellow, and the scrip bluish,—which is all as it should be! For he who is wandering unto death must conceal his nakedness with the mantle of love, must lean upon the staff of wisdom—and in the strength of God is the food which will

keep up his life during his wandering in the desert. The *building* symbol has also the three primary colors: the wood is nearly red, the nails are yellow, the *plumb* is blue; for love, even if it be imperfect, is the substance of temple work, wisdom *determines* its form (as the nails of the level make firm its shape)—but the divine strength is that which enables man to build so that the produce does not fall to the earth spontaneously. The *knight's* symbols are, of course, also red (the mantle), yellow (the lance), and blue (the blade of the lance)—for God's strength will strike down the enemies who will prevent the building warrior from living in the land of the fathers. The butterfly, symbol of *regeneration*, has—also of course—the three primitive colors that we now have mentioned so very often: for she is the representative of the High Priest! The *wheel of time*, finally, is reddish-yellow; for it must be a flaming wheel of fire: "The chaff is to be burned with inextinguishable fire"—and this our life is destined for the separation and annihilation of "the chaff."

On the mosaic are, as far as we can see, two *white* figures: the string of the level, and the scarp of the knight. The string in man which points towards the center of the earth, and towards the highest point of the sky—you may call this string "conscience," or something else—this string is white: it is the Divine in man. But in the warrior it will grow until, like a scarp, it will twine round his whole being. Maybe there is (it was there about twenty years ago) on the upper part of the blue blade of the lance a *white square* like this:

Probably this figure is explained by the mystic words of Rev. ii. 17:

"*To him that overcometh will I give . . . a white stone, and upon the stone a new name written.*"

CARL MICHELSEN.

St. John's day, 1902.

MR. MICHELSEN'S POMPEIIAN MOSAIC.

EDITORIAL COMMENTS.

Mr. Michelsen's "Pompeiian Mosaic" is very interesting, and its reproduction will be welcome to the readers of *The Open Court*, although we cannot accept his interpretation that we are here confronted with Christian symbolism. The truth is that the ideas which permeated Christianity, viz., that life is transient, that all living beings are wanderers to a goal that can be reached only in the consummation of death, and that we have to struggle for the attainment of the eternal, were quite common all over the Roman empire during the first century of the Christian era. The Stoic philosophers are imbued with the same spirit; the life and teachings of Apollonius of Tyana reflect the same views; and the Mithraic religion is so similar to Christianity in all these and in a few other points, that for a long time it was a powerful rival, contending for supremacy in the Western world.

Mr. Michelsen's interpretation of the level as *A* and the wheel as *O* is rather bold. The wheel, in addition, is a symbol frequently used by other religions, especially Buddhism. The spokes of the wheel, it is true, form a six-rayed star, but there is not the slightest reason to interpret it as the symbol of *I* and *X* (the Greek *CH*), to mean *Jesus Christ*. The same six-rayed star served as the symbol of Julius Cæsar, and in many other ways.

The butterfly has been a symbol of the human soul among the Greeks since time immemorial, so much so that the words *soul* and *butterfly* are both called *psyche* in Greek. The presence of the butterfly proves that the owner of the house in which the mosaic was found not only believed in the transiency of life, but also in immortality.

Though the color interpretations of Mr. Michelsen are ingenious, we have not the slightest reason to believe that his ideas prevailed among the early Christians.

Summa summarum, the Pompeiian Mosaic is interesting as proving the prevalence of religious meditation on the vanity of life and the hope that after his journey's end man will reach an eternal goal. But we may be sure that the man who put it up in his house knew nothing as yet of Christ or Christian doctrines. Had he been a Christian, he would certainly have given expression to his faith by some definite Christian symbol,—the fish or the Αω, or the Christogram. P. C.

FROM THE ADI GRANTH.

I.

Say not that this or that distasteful is,
In all the dear Lord dwells,—they all are his.

Grieve not the humblest heart; all hearts that are,
Are priceless jewels, all are rubies rare.

Ah! If thou long'st for thy Beloved, restrain
One angry word that gives thy brother pain.

II.

All creatures, Lord, are thine, and thou art theirs,
One bond Creator with created shares;

To whom, O Maker! must they turn and weep
If not to thee, their Lord, who dost all keep?

All living creatures, Lord, were made by thee,
Where thou hast fixed their station, there they be.

For them thou dost prepare their daily bread,
Out of thy lovingkindness they are fed;

On each the bounties of thy mercy fall,
And thy compassion reaches to them all.

III.

One understanding to all flesh He gives,
Without that understanding nothing lives;

As is their understanding,—they are so;
The Reckoning is the same. They come and go.

The faithful watch-dog that does all he can,
Is better far than the unprayerful man.

Birds in their purse of silver have no store
But them the almighty Father watches o'er.

They say who kill, they do but what they may,
Lawful they deem the bleating lamb to slay;

When God takes down the eternal Book of Fate,
Oh, tell me what, what then will be their state?

He who towards every living thing is kind,
Ah! he, indeed, shall true religion find!

IV.

Great is the warrior who has killed within
Self,—Self which is still root and branch of sin.

"I, I," still cries the World, and gads about,
Reft of the Word which Self has driven out.

V.

Thou, Lord, the cage,—the parrot, see! 'Tis I!
Yama the cat: he looks and passes by.

By Yama bound my mind can never be,
I call on Him who Yama made and me.

The Lord eternal is: what should I fear?
However low I fall, he still will hear.

He tends his creatures as a mother mild
Tends with untiring love her little child.

VI.

I do not die: the world within me dies:
Now, now, the Vivifier vivifies;

Sweet is the world,—ah! very sweet it is,
But through its sweets we lose the eternal bliss!

Perpetual joy, the inviolate mansion, where
There is no grief, woe, error, sin, nor care;

Coming and going and death, enter not in;
The changeless only there an entrance win.

Whosoe'er dieth, born again must be,
Die thou whilst living, and thou wilt be free!

VII.

He, the Supreme, no limit has nor end,
And what HE IS how can *we* comprehend?

Once did a wise man say: "He only knows
God's nature to whom God his mercy shows."

E. MARTINENGO-CESARESCO.

ARTICLES ON THE ORIGIN OF CHRISTIANITY.

It is natural that Emperor William asked himself what effect on Christianity an application of the Higher Criticism to the New Testament would have, and we prophesy that the problem of the origin of Christianity will now come more and more to the front. We have long prepared our readers for a better comprehension of the subject by publishing in both *The Monist* and *The Open Court* series of articles intended to shed light on the religious conditions in the age of Christ. We call special attention to the following titles: "The Birth of Christianity," by Prof. H. Grätz, published in *The Open Court* for November, 1899; "Apollonius of Tyana," by T. Whittaker, published in *The Monist* for January, 1903; a series of articles on Mithraism, by Prof. Franz Cumont, which appeared in *The Open Court* during the year 1902; a series of articles on the relation of Buddhism to Christianity, by Albert J. Edmunds, which appeared in *The Open Court* for the past two years; "Gnosticism in its Relation to Christianity" (*Monist*, July, 1898), an essay which proves that Gnosticism existed prior to Christianity, and that Christianity itself was a Gnostic movement which by its superiority remained victorious according to the law of the survival of the fittest; "The Food of Life and the Sacrament" (*Monist*, January, 1900, and April, 1900), a discussion of the sacrament showing its relations to the ceremonies of sacramental God-eating and religious cannibalism in general; "The Personality of Jesus and His Historical Relation to Christianity" (*Monist*, July, 1900), including an allusion to the Resurrection problem; "The Greek Mysteries, A Preparation for Christianity" (*Monist*, 1900); "The Fairy-Tale Element in the Bible" (*Monist*, April, 1900, and July, 1900), containing translations of the Babylonian Creation and Deluge tablets; "Yahveh and Manitou" (*Monist*, April, 1899), comparing the beliefs of the nomadic Israelites and the American Indians, both being characteristic of a certain phase of man's religious evolution; "Jew and Gentile in Early Christianity" (*Monist*, January, 1901); "The Nativity" (*Open Court*, December, 1899), showing similarties in religious art; "The Lord's Prayer" (*Open Court*, August, 1898); "Babylonian and Hebrew Views of Man's Fate After Death (*Open Court*, June, 1901); "Seven" (*Open Court*, June, 1901, and July, 1901), showing the Babylonian origin of the sacredness of the number seven; "Pagan Elements of Christianity and the Significance of Jesus" (*Monist*, April, 1902); "Alpha and Omega" (*Open Court*, October, 1902); "Zarathushtra" (*Open Court*, June, 1900); "Mithraism and Its Influence on Christianity" (*Open Court*, February, 1903).

The climax is capped by an article, to appear in the next or the following *Monist*, by Hermann Gunkel, Professor of Old Testament Theology in the University of Berlin, and the well-known author of *The Legends of Genesis*, *Commentary on Genesis*, *Creation and Chaos*, and other productions of remarkable scholarship. He has written an article entitled "The Religio-Historical Interpretation of the New Testament," which is as bold and radical in outlining the nature of the New Testament as is Dr. Delitzsch's article concerning the composition of the Old Testament.

While we were preparing the present number of *The Open Court*, a pamphlet

under the name *The Age of Christ* has been printed, and will be ready for the market within a few days. It discusses in brief outline the problem of the origin of Christianity, touching upon several of the problems discussed in the articles mentioned above. P. C.

BOOK REVIEWS AND NOTES.

Beiträge zur Kritik des psychophysischen Parallelismus vom Standpunkte der Energetik. Von *Edward Gleason Spaulding*. Halle: Max Niemeyer. 1900. Pages, vii, 109.

This essay was worked out in the psychological seminary of Prof. B. Erdmann of Bonn, and the Professor warns us in a prefatory remark attached generally to the labors of his scholars, that since they enjoy full liberty of investigation, he must not be considered responsible for their results. Spaulding criticises the theory of parallelism, although he grants that everything depends upon definition, for the word is utilised in various ways, sometimes as a correlation of two factors and sometimes as an extension of the law of energy. He accepts the main characteristics of parallelism according to the interpretation of Mach, Hering, and Müller. He opposes both Wundt and Sigwart,—the former an opponent of the theory of parallelism, the latter its main advocate and supporter; and finally comes to the conclusion that "not the psychical, the ego, the free will, or any Copernican standpoint, but the physical, energy, plays the main part in cosmic processes. Consciousness originates and passes away; matter persists. 'Within the individual,' we can say with Fechner, 'physical conditions are active underneath the threshold and condition the causal connection.' Ganglia, the ends of nerve fibres, are physiological elements; they are subject to the law of energy, of conservation, of unequivocality, and the law of entropy. Moreover, the fate of consciousness, the soul of man, is irredeemably tied to the moral course of the universe, which takes no account of man." K.

Elementi di etica. Di *Giovanni Vidari*, Professor all' Università di Palermo, Milan: Ulrico Hoepli. 1902. Pages, 334.

The mention of this work, *The Elements of Ethics*, by Giovanni Vidari, of the University of Palermo, affords opportunity of commenting upon the great publishing activity of Italy, which, according to the statistics of the year just passed, produced more books than the United States. The series "Manuali Hoepli," of which Professor Vidari's book forms a volume, was begun in November, 1901, and now counts some 700 volumes,—manuals of small format, running from 100 to 400 pages, and treating of every branch of science from mathematics and astronomy to agriculture, and of every branch of literature, law, history, language, education, art, industry, commerce, and sports. The series is intended for independent students and the general public, and is international in its character to the extent of containing many translations from the other languages of Europe. Professor Vidari's work, here mentioned, is a simple and popular exposition of the conception of ethics laid down in a larger work by him, and forms a compendium of the subject intended for young men in academies, high schools, and colleges, as well as for all educated persons desirous of obtaining an idea of the direction which the modern study of ethics is assuming.

A new revised and popular edition of *Supernatural Religion; An Inquiry Into the Reality of Divine Revelation*, originally issued for the Rationalist Press Association, has just been published by Watts & Co., of London. It is a thoroughgoing examination of the evidence on which the miraculous and supernatural elements of Christianity repose, conducted from the rationalist point of view, and is by its large bulk of some 900 odd pages a full synopsis of the arguments of liberal thought on the tenability of historical Christianity. (Price, 6 shillings net.) The same house has also just issued a critical examination of *Mr. Balfour's Apologetics*. It will be remembered that Mr. Balfour in his books of some years ago, especially in his *Foundations of Belief*, undertook to show that it was not only reasonable and consistent with a scientific attitude of mind to believe in the Christian religion in a modified form, but that in addition "the great body of our beliefs, scientific, ethical, theological, form a more coherent and satisfactory whole if we consider them in a Christian setting than if we consider them in a naturalistic one." The author of the work under consideration takes up "the gauntlet thus thrown down," confident that the truth will prevail and that all Mr. Balfour's main positions "will yield to a determined assault,"—an assault which has been vigorously and skilfully conducted. (Price, 3s. 6d. net.) Both these books are typographically well got up.

The Temples of the Orient and Their Message in the Light of Holy Scripture, Dante's Vision, and Bunyan's Allegory is the title of a collection of notes by the author of *Clear Round!* "offered as a solution of the perplexing thoughts and questions summed up in the five words, *What does it all mean?*" As "the New Testament lies concealed in the Old," so the Old cannot "be fully enjoyed without using the key to its meaning which Orientalists and archæologists offer." The purpose of the disconnected comments of this volume, culled from the religious lore of the ages, is to show that the god of the Christian scriptures is the god to whom all religious souls in all ages have prayed. A map of the ancient temples, as here interpreted in the light they cast upon the Holy Scriptures, is prefixed to the volume. (London: Kegan Paul, Trench, Trübner & Co. 1902. Pages, viii, 442.)

Animism and Law is the title of a pamphlet of eighteen pages by Ananda Maitriya, published by a Buddhist missionary society of Rangoon, Burma, and is an exposition of the significance of Buddhism. Thus the title is misleading, and we might substitute for law, religion. Law in the present case is a translation of *Dhamma*, that is doctrine, especially the doctrine of the Buddhist religion. The author, perhaps at present, next to Dharmapála, the most active propagandist of the Buddhist religion, claims that all prior religions are animistic, that Buddhism is the higher view which abolishes the superstitions of savage animism, and teaches a religion in harmony with pure views, thus constituting a religion that would not come into conflict even with the science to-day. (Price, four annas.)

The success of the recent revivals of classical and romantic themes has induced Mr. Charles S. Elgutter, of Omaha, to dramatise the story of *Iphigenia* at Aulis. It is a theme of universal and intensely pathetic interest, and in the hands of Euripides became one of the most widely known stories of antiquity. Mr. Elgutter has drawn up his play on entirely modern lines. (Omaha: Press of Clement Chase. Printed for private circulation. Pages, 100.)

In *The Life of Jesus of Nazareth*, Professor Rush Rhees of the Newton Theological Institution has attempted rather "to bring the Man Jesus before the mind in the reading of the gospels" than to discuss questions of geography, archæology, and doctrine. In our study of Christ, he would have us begin as the apostles and evangelists began, whose "recognition of the divine nature of Jesus was a conclusion from their acquaintance with him....Their knowledge of him progressed in the natural way from the human to the divine." And it is because God chose "to reveal the divine through a human life rather than through a series of propositions which formulate truth," that our author has initially approached his subject from its purely human side. The work is written from a purely orthodox point of view, but is the result of the study of the most recent and best theological literature. So far as historical matters are concerned, it is only on minor points of detail in the portrayal of the secular environment in which Jesus was placed that we should be constrained to differ from the author. But in some more essential matters the case is different. For example, the author, in acknowledging the great difficulties offered by miracles to modern thought, remarks by way of justification that it is nevertheless "fair to insist that the question is one of evidence, not of metaphysical possibility." Again, in stating that the idea of a miraculous birth is very foreign to modern thought, the author adds that "it becomes credible only as the transcendent nature of Jesus is recognised on other grounds;" and while intimating that the Incarnation did not require miraculous conception, he says: "It may be acknowledged that a miraculous conception is a most suitable method for a divine Incarnation." Here again it is a question, not of "metaphysical possibility," but of "evidence!" We hardly think that these solutions answer the question from a purely scientific point of view, but in any event they exhibit very distinctly both the strength and the weakness of the situation. (New York: Charles Scribner's Sons. 1900. Pages, xvii, 320. Price, $1.25.)

A book that we can recommend to all aspiring students is Mr. Frank Cramer's *Talks to Students on the Art of Study*. Mr. Cramer has many sound and practical ideas on methods of study, and has made it his purpose not to supply a manual of psychology, logic, or pedagogy, but "to furnish effective suggestion to the student who is passing through the critical period of his intellectual life, while the mental powers are plastic but on the point of setting. The writer believes that with helpful suggestion, youth can in a measure be its own instructor in the matter of the right training of its powers. The first essential to this end is that it shall see clearly what is wanted." (San Francisco: The Hoffman-Edwards Company. 1902. Pages, vi, 309.)

Mr. Ernest Crosby's *Swords and Plowshares*, issued last year by the Funk & Wagnalls Company, is a collection of poetic utterances against warfare, oppression, and cruelty in every form. Sometimes rhapsodic and Waltwhitmannian in form, they are also again very impressive, and give a vivid picture of the Tolstoyan philosophy of which Mr. Crosby is an enthusiastic disciple. (Pp., 126. Price, cloth, $1.00 net.)

We acknowledge the receipt from the Dürr'schen Buchhandlung, of Leipsic, of a pamphlet by Stephan Waetzoldt containing three lectures of philological and literary interest on (1) "The Early Language of Goethe;" (2) "Goethe and Romanticism"; (3) "Goethe's Ballads." (Pp. 76. Price, M. 1.60.)

Dr. C. E. Linebarger is doing valuable service in his publication of reprints of Science Classics, "Selections from the writings of the pioneers of science," so edited as to be within the comprehension of the beginner in science. This is a work that has long been needed and is a departure from the well-known Ostwald series in German by its being adapted to the purpose of elementary instruction in science. The first of the series is Lavoisier's famous *Analysis of Air and Water*, and a transcript of the original papers of Joule on the *Mechanical Equivalent of Heat* is promised. We also desire to call attention in this connection to Dr. Linebarger's little magazine, *School Science*, a journal of science-teaching in secondary schools, which no teacher of science should be without. It is certainly fulfilling a significant purpose, and appears to be very effectively conducted. A mathematical supplement to the journal is promised, which shall be devoted to the problems of secondary mathematical teaching and will aim to render instruction in this science more practical and more organic.

The number of the really good manuals for teachers is increasing so rapidly that no ambitious instructor can very well excuse himself for being ignorant of the most advanced methods of instruction in his department, and we have now to note with pleasure the appearance of an admirable work on *The Teaching of Chemistry and Physics in the Secondary School* by Dr. Alexander Smith of the University of Chicago and Dr. Edwin H. Hall, of Harvard. In point of completeness and practicability the volume leaves little to be desired; the bibliography is very comprehensive; the modes and needs of instruction are considered in all their aspects; and the laboratory equipment amply discussed. The authors have taken a plain, common-sense view of the problems presented in their respective fields, and instructors in chemistry and physics will do well to seek counsel with them. (New York, London, and Bombay: Longmans, Green & Co. Pages, 377. Price, cloth, $1.50.)

Dr. S. S. Laurie, Professor of the Institutes and History of Education in the University of Edinburgh, has made a selection of the more permanent of his essays and addresses on educational topics and offered them to the educational public in an attractive volume entitled *The Training of Teachers and Methods of Instruction*. The lectures are stimulating and important for the insight they give into British theories of education. (Cambridge: at the University Press. 1901. Pp., 295. Price, $1.50.)

Instructors in physics will derive considerable historical and methodological information from Dr. Nikolaus Bödige's little German pamphlet *The Principle of Archimedes as a Basis of Experiments in Practical Physics*, published by Meinders & Elstermann, Osnabrück. The book is illustrated with some old prints of aerometers of the time of Robert Boyle, Roberval, and Fahrenheit. The illustrations are twenty-nine in all.

The Fonic Publishing Hous of Ringos, N. J., sends us a copy of a book apparently written in Icelandic and entitled *Hwot iz the Sol? Haz the Dog a Sol?* by Dr. C. W. Larisun. We await with interest the translation of this interesting "sicolojic" study of canine life into English.

Watts & Co., 17 Johnson's Court, Fleet Street, London, have published a cheap edition (6d.) of Spencer's *Essays on Education*.

It is difficult to conjecture the purpose which inspired Mr. James V. Fernald, we shall not say in compiling, but in publishing, his work *Scientific Sidelights*, which illustrates "thousands of topics by selections from standard works of the masters of science throughout the world." The redeeming feature of the work is its splendid indexes, but there seems to have been no leading idea as to the selection of the topics nor any just measure of proportion exhibited in the assignment of space. With a predilection the lack of which would render any of Funk & Wagnalls's publications intensely uninteresting, alcohol has been accorded more extended mention than agriculture or art. And when one comes across such entries as "Beauty of Nature Secondary in Greek Poetry," or "Science adds Glory to the Vision of Redemption," or "Thirst of Alpine Climbers—Milk a Perfect Refreshment,"—one wonders what one will not find in the work. It is a collection of scraps the majority of which are valuable enough in themselves, as being original quotations from great inquirers and writers of prominence; and in running through the pages of the work one will find much that is instructive. (Pages, viii, 917. Price, $5.00 net.)

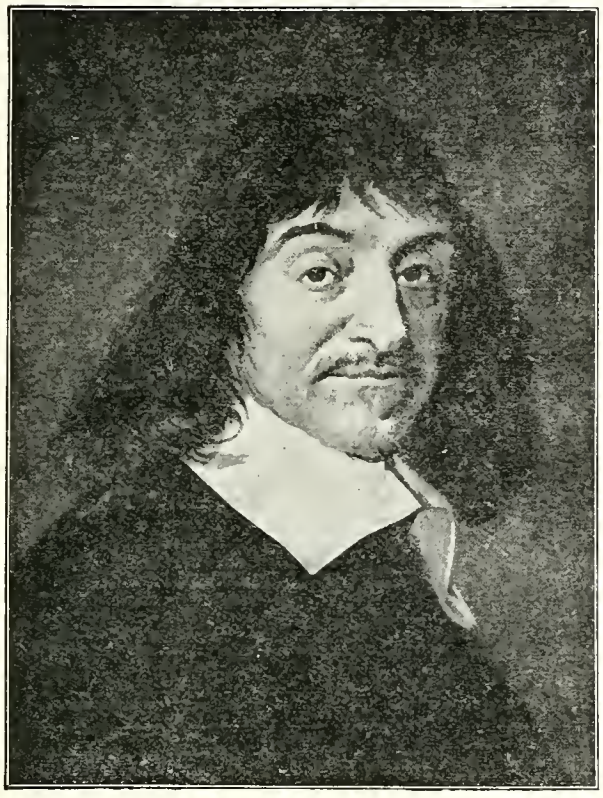
M. Fr. Paulhan, the French psychologist, continues his studies of intellectual types in a new work *Analystes et esprits synthétiques*. All the processes of the mind are but the variations or the results of the two opposed factors of analysis and synthesis, and consequently the division of mental types into those that analyse and those that synthetise too much. M. Paulhan's former work on *Logical Minds and Illogical Minds* attracted much attention. (Paris: F. Alcan. Pages, 196. Price, 2 fr. 50.)

The false report that the Japanese Buddhists would convene a Religious Parliament caused a poor Hindu priest and one of his disciples to travel to Japan, only to be disappointed at learning that the leading Buddhist priests had nothing to do with the project. Being without means, he became at once an object of charity. Accounts of his sorrowful story and incidents connected with the rumor of the Congress fill the columns of both the foreign and native papers of Japan.

A correspondent writes us *a propos* of the article "Lay Church" in the January *Open Court* as follows: "I see in this Lay Church plan one of the greatest movements of modern times. We are evidently on the verge, if I may so express it, of a restatement of the religious problem, and a vent should be afforded the ferment of thought. This may be the real problem of the twentieth century."

Philosophy, Psychology, and Language

Philosophical Classics



RENE DESCARTES.
(1596-1650.)

Descartes' Discourse on Method

With portrait of Descartes after the painting of Franz Hals. Index, preface, and bibliography. Pages, 86. Paper, 25c.+4c. (1s. 6d.)

Berkeley's Treatise Concerning the Principles of Human Knowledge

Reprinted from the editions of 1710 and 1734. With George Henry Lewes's Biography of Berkeley, and a critical presentation of his philosophy. Frontispiece, portrait of Berkeley, by Smibert. Pages, 150. Paper, 25c.+6c. (1s. 6d.)

"I am delighted with your service to students of philosophy in the publication of the Classics in Philosophy, such as the copy of Berkeley's Principles, which I have just received. The print and the extremely low price at which the little books are sold make them valuable to all students, and I am sure that I speak for the teachers when I say that we are very grateful to you. I hope that you may be able to go on with your good work, and I shall certainly call the attention of my students to your work every year."—James H. Tufts, Professor of Philosophy in The University of Chicago.

Berkeley's Three Dialogues Between Hylas and Philonous

Reprinted from the editions of 1713 and 1734. With portrait of Berkeley by T. Cooke. Pages, 136. Paper, 25c.+5c. (1s. 6d.)

"The gem of British metaphysical literature."—Prof. A. Campbell Fraser.

"Berkeley is one of the most exquisite of all writers of English prose."—Edmund Gosse.

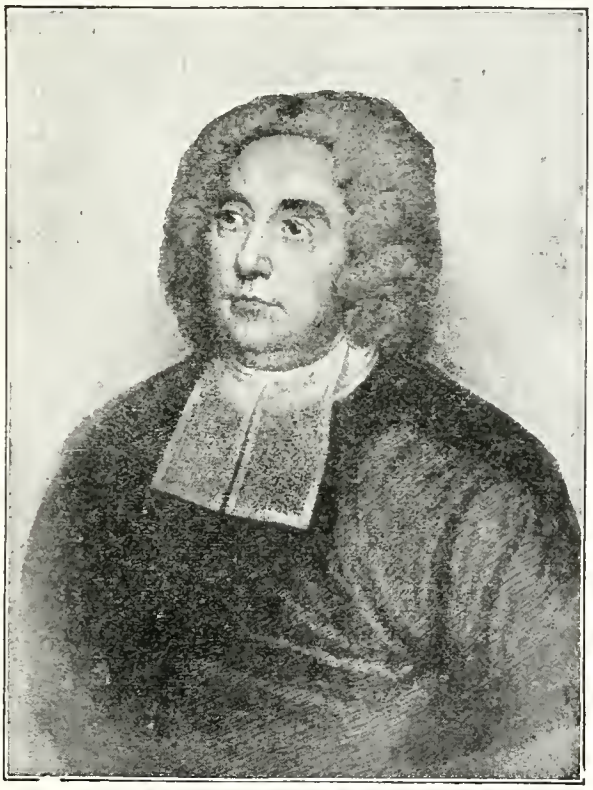
Kant's Prolegomena to Any Future Metaphysic

Edited in English by DR. PAUL CARUS. With much supplementary material for the study of Kant, portraits, Paulsen's chronology of Kant, etc. Pages, 301. Cloth, 75c. net (3s. 6d. net).

Hume's Enquiry Concerning the Principles of Morals

From the edition of 1777. Portrait by Reynolds. Pages, 169. Paper, 25c.+6c. (1s. 6d.)

"Of all my writings, historical, philosophical, or literary, in my opinion, incomparably the best."—David Hume.



GEORGE BERKELEY.
(1685-1753.)

Philosophy, Psychology, and Language—Continued

DAVID HUME. (1711-1776.)

Hume's Enquiry Concerning Human Understanding

From the edition of 1777, with Hume's autobiography and portrait of Hume by Ramsay. Pages, 201. Paper, 25c.+6. (1s. 6d.)

Descartes' Meditations, and Extracts from the Principles of Philosophy

With copies of original title pages, introduction by Prof. Lévy-Bruhl, etc. Pages, 248. Paper, 35c.+9c.

Leibniz's Discourse on Metaphysics, Correspondence with Arnauld, and Monadology

With an historical and critical introduction by PAUL JANET, member of the French Institute. Translated by DR. G. R. MONTGOMERY, Lecturer in Yale University. Frontispiece: The Leibniz monument in Leipsic. Pp. 272. Cl., 75c. net (3s. 6d. net).

Primer of Philosophy

A Popular Exposition of the Fundamental Notions of Philosophy. By DR. PAUL CARUS. Third edition. Pages, vi, 242. Cloth, $1.00 (5s.).

"The work abounds in clear, terse definitions, dealing with all the principal points in philosophy, and is full of original and powerful thinking."—Literary World, London.

Fundamental Problems

The Method of Philosophy as a Systematic Arrangement of Knowledge. Third edition, enlarged and revised. By DR. PAUL CARUS. Pages, xii, 373. Cloth, $1.50 (7s. 6d.).

"Reverent, elevated, and comprehensive. . . . The book is of most excellent spirit and of great ability."—Public Opinion.

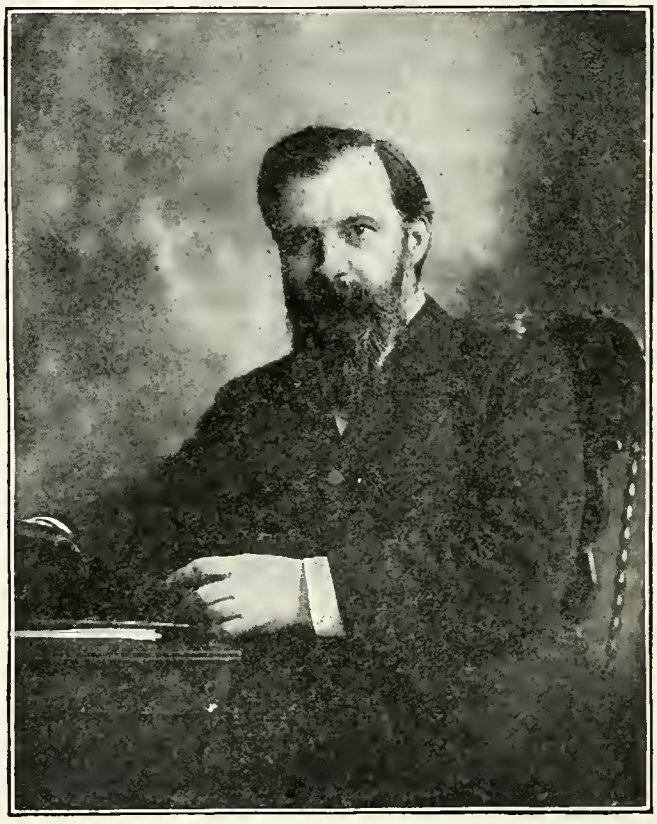
"A good introduction to the study of formal philosophy."—The Scotsman, Edinburgh.

Monism and Meliorism

A Philosophical Essay on Causality and Ethics. By DR. PAUL CARUS. Pp., 83. Paper, 50 cents (2s. 6d.).

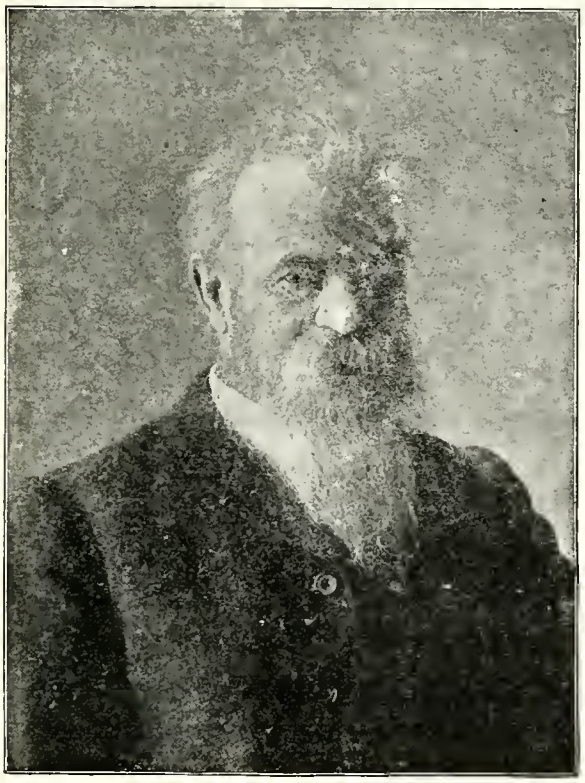
Philosophical Pamphlets

By DR. PAUL CARUS. (1) The Philosophy of the Tool. Pp., 24. Paper, 10c. (6d.). (2) Our Need of Philosophy. Pp., 14. Paper, 5c. (3d.). (3) Science a Religious Revelation. Pp., 21. Paper, 5 cents (3d.).



DR. PAUL CARUS.
(Born July 18, 1852.)

Philosophy, Psychology, and Language—Continued



MAJOR JOHN WESLEY POWELL
Born March 24, 1834.

Truth and Error

Or The Science of Intellection. By J. W. POWELL, Director of the United States Bureau of American Ethnology, and Sometime Director of the United States Geological Survey. Pages, 423. Cloth, gilt top, $1.75 (7s. 6d.).

A highly original work on psychology, dealing largely with epistemology. Important to psychologists and students of the philosophy of science.

"Major Powell is a versatile, brilliant, patient, and earnest thinker and writer. His volume is burdened with a costly and splendid array of facts. And while this is all true, yet this is not a tithe of the value of the volume. Its intrinsic value is in the systematisation of modern thought. . . There is a charm in his directness. No qualification, no ambiguity, no affection. 'I hold,' 'I deny,' ring like the strokes of hammer on brazen casque."—The Washington Post.

Kant and Spencer

A Study of the Fallacies of Agnosticism. By DR. PAUL CARUS. Pages, 101. Paper, 20 cents (1s.).

CONTENTS: (1) The Ethics of Kant; (2) Kant on Evolution; (3) Mr. Spencer's Agnosticism; (4) Mr. Spencer's Comment and the Author's Reply.

The purpose of the little book is to show that the ethics of Kant are not supernatural and unevolutionary; that Kant was a precursor of Lamarck, Von Baer, and Darwin; and that Mr. Spencer's philosophy is essentially reactionary, being a haven of refuge even for his enemies.

Science and Faith

Or Man as an Animal and Man as a Member of Society. With a Discussion of Animal Societies. By DR. PAUL TOPINARD, Late General Secretary of the Anthropological Society of Paris. Translated from the French by THOMAS J. MCCORMACK. Pages, 361. Cloth, gilt top, $1.50 net (6s. 6d. net).

"A most interesting volume."—Glasgow Herald.

"Stimulating and suggestive."—The Scotsman.

"The book is worth reading, whether we are or are not satisfied with its conclusions."—Nature.

"An unusually interesting volume . . . suggestive in the highest degree . . . . worth the time of any man to read from beginning to end."—Times-Herald.

DR. PAUL TOPINARD.

On the Origin of Language

By LUDWIG NOIRÉ. Pp., 57. Paper, 15c. (9d.).

This essay contains the gist of Noiré's theory, which is now the most accredited doctrine among philosophers; Noiré is the author of the famous utterance: "No Reason without Speech; No Speech without Reason."

Philosophy, Psychology, and Language—Continued

PIERRE BAYLE. (1647-1706.)
From Lévy-Bruhl's History of Philosophy in France.

History of Modern Philosophy in France

By LUCIEN LÉVY-BRUHL, Maître de Conférences in the Sorbonne, Professor in the École Libre des Sciences Politiques. With twenty-three photogravure and half-tone portraits of French philosophers, from rare and classical sources. Also a Bibliography of Modern French Philosophy. Handsomely bound, printed on antique paper with wide margins. Pages, 500. 8vo. $3.00 net (12s. net).

"A more attractive book than this it has seldom been our pleasure to read."—The Methodist Review.

"The portraits are admirably reproduced."—Literature.

"It is a remarkably handsome volume . . . The illustrations are truly masterpieces of art."—Chicago Israelite.

Three Introductory Lectures on the Science of Thought

With a correspondence on "Thought Without Words," between F. Max Mueller and Francis Galton, the Duke of Argyll, George J. Romanes and others. (1) The Simplicity of Language; (2) The Identity of Language and Thought; and (3) The Simplicity of Thought. By PROF. F. MAX MUELLER. Pages, 128. Cloth, 75 cents (3s. 6d.).

Prof. F. Max Mueller sets forth in this book his view of the Identity of Language and Thought, which is a further development of Ludwig Noiré's theory that "man thinks because he speaks."

"The ripe expression of a life-long labor in the study of the science of language."—Scotsman, Edinburgh.

मोक्षमूलरमहः

F. Max Müller.

(1823-1900)

Three Lectures on the Science of Language

The Oxford University Extension Lectures, with a Supplement, "My Predecessors," an essay on the genesis of "The Science of Thought." By PROF. F. MAX MUELLER. Pages, 112. Cloth, 75 cents (3s. 6d.).

Prof. F. Max Mueller points out that the difference between man and animal is due to language, yet there is no mystery in language. Thought is thicker than blood, and the bonds of the same language and the same ideas are stronger than family or race.

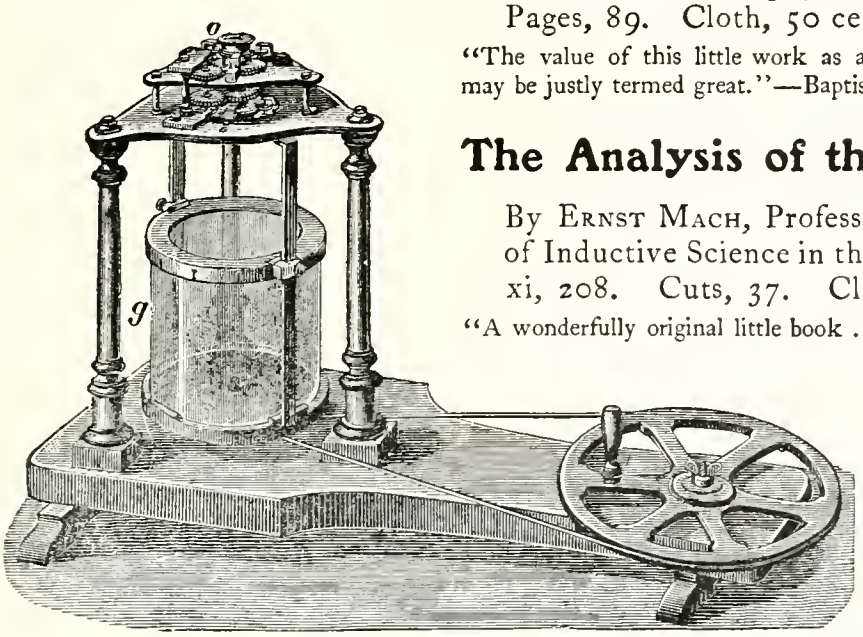
"The old fascination and still riper wisdom are offered in these later utterances."—The Watchman, Boston.

Philosophy, Psychology, and Language—Continued

The Philosophy of Ancient India

By Prof. Richard Garbe. Containing (a) A Brief History of Indian Philosophy; (b) The Connexion between Greek and Indian Philosophy; and (c) Hindu Monism. 12mo. Pages, 89. Cloth, 50 cents net (2s. 6d.).

"The value of this little work as a contribution to the history of philosophy may be justly termed great."—Baptist Union.



Apparatus for Observing the Conduct of Animals in Rapid Rotation. From Mach's Analysis of the Sensations.

The Analysis of the Sensations

By Ernst Mach, Professor of the History and Theory of Inductive Science in the University of Vienna. Pages, xi, 208. Cuts, 37. Cloth, $1.25 net (6s. 6d.).

"A wonderfully original little book . . . . Like everything he writes, a work of genius."—Prof. W. James, of Harvard.

"There is no work known to the writer which in its general scientific bearing is more likely to repay richly thorough study. We are all interested in nature in one way or another, and our interests can only be heightened and clarified by Mach's wonderfully original and wholesome book."—Prof. J. E. Trevor in The Journal of Physical Chemistry.

On Memory, and the Specific Energies of the Nervous System

By Prof. Ewald Hering, Professor of Physiology in the University of Leipsic. Pages, 50. Paper, 15 cents (9d.).

The first of the essays constituting this pamphlet is the famous Vienna address on "Memory as a General Function of Organized Matter," and the second the well-known exposition of Johannes Mueller's doctrine of specific energies, one of the most important and fruitful physiological conceptions of the present century. Both essays are regarded as exemplars of scientific presentation.

Ewald Hering.
(Born August 5, 1834.)

The Psychology of Attention

By Th. Ribot, Professor in the Collège de France and editor of the Revue Philosophique. Fourth edition. Authorized translation. Pages, 121. Cloth, 75 cents (3s. 6d.).

The Diseases of Personality

By Th. Ribot. Third edition. Authorized translation. Pp., 157. Cloth, 75c. (3s. 6d.).

The Diseases of the Will

By Th. Ribot. Authorized translation. Pages, vi, 121. Cloth, 75 cents (3s. 6d.).
N. B.—Full set of the above three books, $1.75 net (9s.). For a characterization of these important books by Ribot, see next page.

Philosophy, Psychology, and Language—Continued

THÉODULE RIBOT.

The Evolution of General Ideas

By TH. RIBOT. Authorized translation by FRANCES A. WELBY. Pages, 231. Cloth, $1.25 (5s.).

Professor Ribot's works have always been extremely popular with the general reading and scientific world. His concise style, his skill in epitomising and in arranging in a compact whole the results of the researches of the many varied sciences which bear upon the problem he is investigating, are too well known to need repetition. At the same time, some single and original leading idea always pervades his productions, which are signalized by a fearless and rigorous analysis of psychical phenomena and by an entire absence of metaphysical prepossessions. Notably his views of the origin of the ego and of the nature of personality are important.

"Without attempting to condense further this already condensed and very readable little volume ['The Diseases of Personality,' see the preceding page] written by a distinguished inquirer, I will conclude by saying that it well deserves a place in any general library."—Mr. Francis Galton, in Nature.

"The publishers of 'The Open Court' have rendered many services to the cause of popularizing and extending the field of scientific thought and literature, but in nothing have they placed the educated and educating public more in their debt than when they brought out the translations, authorized by the author, of M. Ribot's eminent psychological monographs, which the professional students have accepted as the best and most reliable statements of the present deductions concerning the attention, the personality, and the will."—Journal of Education, Boston.

The Soul of Man

An Investigation of the Facts of Physiological and Experimental Psychology. By DR. PAUL CARUS. Second edition. With an Appendix on the latest researches in Physiology. 182 diagrams. Pp., 482. Price, cloth, $1.50 net (6s. net).

This book is a new interpretation of the facts of soul-life, as revealed by modern research. It deals chiefly with the nature of mind, the origin, as well as the organ, of consciousness, the correlation of natural and artificial sleep (hypnosis), the significance of pleasure and pain, and also with the part death and immortality play in the economy of soul-life.

"A solid addition to the works upon physiological psychology."—Public Opinion.

"The work of a profound scholar, and yet written in language so simple that the youngest reader can comprehend it."—Boston Transcript.

"As a lesson in method, let alone their contents, his works are among the best in their field . . . His religion of the future has in very truth all the essentials of the faith which alone can win the assent and devotion of the thinker . . . This book must be read and re-read to be fully appreciated."—Dr. E. G. Hirsch, in Reform Advocate.

THE HUMAN BRAIN FULLY DEVELOPED.
(From Carus's SOUL OF MAN.)

Philosophy, Psychology, and Language—Continued

Psychology for Beginners

By Hiram M. Stanley, Member of the American Psychological Association, author of the "Evolutionary Psychology of Feeling" and "Essays on Literary Art." Pages, 44. Boards. 40 cents net (2s.).

Designed to give to beginners a direct insight into the subject and familiarity with its methods. The student is told as little as possible, but is allowed to learn for himself by simple observation and experiment.

"Invaluable to teachers."—Canadian Teacher.

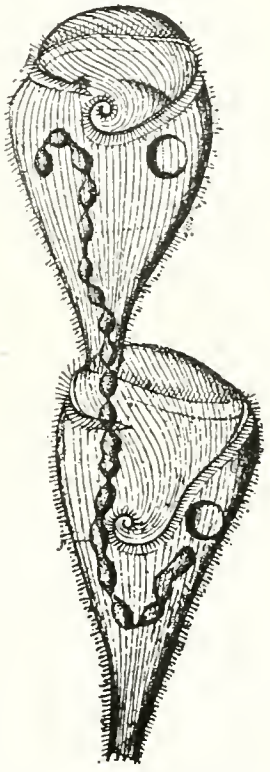
"A capital little primer . . . . printed in bold type . . . . with twenty-six blank pages of stout paper for the scholar's notes and exercises . . . . . Treats the most elementary principles of psychology . . . . . in the semi-conversational style that suggests the practised teacher."—Literary World, London.

The Psychic Life of Micro-Organisms

By Dr. Alfred Binet. Authorized translation. Pages, xii, 120. Cloth, 75 cents (3s. 6d.).

"M. Binet is a savant of high standing who has done, and is doing, admirable work in psychology."—Prof. G. J. Romanes.

"He fortifies his theory by such a wealth of exact observation and experiments, that the reader who follows his demonstration carefully can hardly fail of conviction."—New York Tribune.



Stentor in Process of Division. (From Binet's Psychic Life of Micro-Organisms.)

On Double Consciousness

Studies in Experimental Psychology. By Dr. Alfred Binet. Third edition. Pages, 93. Paper, 15 cents (9d).

"A most valuable contribution to this important subject which none of its students can afford to leave unread."—Public Opinion.

The Psychology of Reasoning

By Dr. Alfred Binet. Pages, 191. Cloth, 75 cents net (3s. 6d.).

"An admirable little book . . . clear and solid . . . . deserves careful reading two or three times over."—Francis R. Galton.

Articles Published in The Monist and The Open Court on Subjects Related to Philosophy, Psychology, Etc.

Copies of "The Monist" and "The Open Court" containing the articles here listed will be supplied by the publishers at the prices stated. Articles marked O. P. can be supplied in volumes only.

Some Questions of Psycho-Physics. Sensations and the Elements of Reality. By Dr. Ernst Mach, Vienna. "Monist," Vol. I, No. 3. 50 cents.

Psychology of Conception. By Prof. J. Sully, London. "Monist," Vol. I, No. 3. 50c.

On Thought and Language. By the late Prof. F. Max Mueller. "Monist," Vol. I, No. 4. 50 cents.

The Present Position of Logical Theory. By Prof. John Dewey, Chicago. "Monist," Vol. II, No. 1. 50 cents.

Will and Reason. By B. Bosanquet, London. "Monist," Vol. II, No. 1. 50 cents.

Thought and Language. By Prof. G. J. Romanes. "Monist," Vol. II, No. 1. 50 cents.

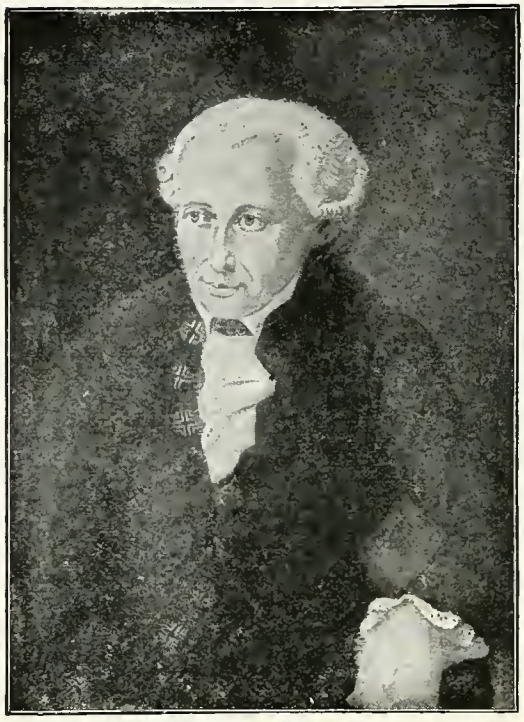
The Continuity of Evolution. The Science of Language versus the Science of Life, as Represented by Prof. F. Max Mueller, and Prof. G. J. Romanes. By Dr. Paul Carus, "Monist," Vol. II, No. 1. 50 cents.

Philosophy, Psychology, and Language—Continued

Are There Things in Themselves? By Dr. Paul Carus. "Monist," Vol. II, No. 2. 50c.

The Doctrine of Necessity, Examined. By Charles S. Peirce. "Monist," Vol. II, No. 3. 50 cents.

Our Monism. The Principles of a Consistent, Unitary World-View. By Prof. Ernst Haeckel, Jena. "Monist," Vol. II, No. 4. 50 cents.



Immanuel Kant
(1724-1804)

What Does Anschauung Mean? By Dr. Paul Carus. "Monist," Vol. II, No. 4. 50 cents.

The Law of Mind. By Charles S. Peirce. "Monist," Vol. II, No. 4. 50 cents.

Mr. Charles S. Peirce's Onslaught on the Doctrine of Necessity. By Dr. Paul Carus. "Monist," Vol. II, No. 4. 50 cents.

Man's Glassy Essence. By Charles S. Peirce. "Monist," Vol. III, No. 1. 50 cents.

The Idea of Necessity: Its Basis and Scope. By Dr. Paul Carus. "Monist," Vol. III, No. 1. 50c.

Evolutionary Love. By Charles S. Peirce. "Monist," Vol. III, No. 2. 50 cents.

Panpsychism and Panbiotism. By Dr. Paul Carus. "Monist," Vol. III, No. 2. 50 cents.

Reply to the Necessitarians. By Charles S. Peirce. "Monist," Vol. III, No. 4. 50 cents.

The Founder of Tychism: His Methods, Philosophy, and Criticisms. By Dr. Paul Carus. "Monist," Vol. III, No. 4. 50 cents.

Correlation of Mental and Physical Powers. By J. Venn. "Monist," Vol. IV, No. 1. 50 cents.

A Monistic Theory of Mind. By Prof. Lester F. Ward. "Monist," Vol. IV, No. 2. 50c.

Monism and Henism. By Dr. Paul Carus. "Monist," Vol. IV, No. 2. 50 cents.

Three Aspects of Monism. By Prof. C. Lloyd Morgan, Bristol, Eng. "Monist," Vol. IV, No. 3. 50 cents.

The Metaphysical X in Cognition. By Dr. Paul Carus. "Monist," Vol. V, No. 4. 50c.

Arrested Mentation. By Dr. G. Ferrero. "Monist," Vol. VI, No. 1. 50 cents.

Pathological Pleasures and Pains. By Prof. Th. Ribot, Paris. "Monist," Vol. VI, No. 2. 50 cents.

Nature and the Individual Mind. By Dr. Kurd Lasswitz, Gotha, Germany. "Monist," Vol. VI, No. 3. 50 cents.

Philosophical Terminology and Its History. By Prof. Rudolf Eucken, Jena. "Monist," Vol. VI, No. 4. 50 cents.

On the Origin and Import of the Idea of Causality. By Prof. Friedrich Jodl, Vienna. "Monist," Vol. VI, No. 4. 50 cents.

The Regenerated Logic. By Charles S. Peirce. "Monist," Vol. VII, No. 1. 50 cents.

Panlogism. By Dr. Paul Carus. "Monist," Vol. VII, No. 1. 50 cents.

The Logic of Relatives. By Charles S. Peirce. "Monist," Vol. VII, No. 2. 50 cents.

Hegel To-day. By Prof. Rudolf Eucken, Jena. "Monist," Vol. VII, No. 3. 50 cents.

Philosophy, Psychology, and Language—Continued

The Realities of Experience. By Prof. C. Lloyd Morgan, Bristol, England. "Monist," Vol. VIII, No. 1. Supplied only in complete sets.

Prof. F. Max Mueller's Theory of the Self. By Dr. Paul Carus. "Monist," Vol. VIII, No. 1. Supplied only in complete sets.

Automatism, Determinism and Freedom. By Prof. C. Lloyd Morgan, Bristol, England. "Monist," Vol. VIII, No. 1. Supplied only in complete sets.

Physical and Metaphysical Causation. By Prof. C. Lloyd Morgan, Bristol, England. "Monist," Vol. VIII, No. 2. 50 cents.

On the Philosophy of Laughing. By Dr. Paul Carus. "Monist," Vol. VIII, No. 2. 50 cents.

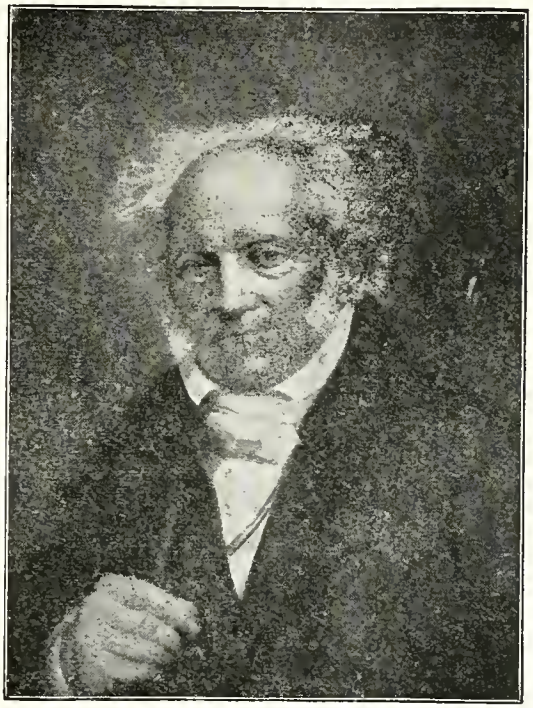
Evolution and Ethics. By Prof. John Dewey, University of Chicago. "Monist," Vol. VIII, No. 3. 50 cents.

The Philosophy of Evolution. By Prof C. Lloyd Morgan, Bristol, England. "Monist," Vol. VIII, No. 4. 50 cents.

On Pasigraphy. Its Present State and the Pasigraphic Movement in Italy. By Prof. Ernst Schroeder, Carlsruhe, Germany. "Monist," Vol. IX, No. 1. 50 cents.

Immorality as a Philosophic Principle. A Study of the Philosophy of Friedrich Nietzsche. By Dr. Paul Carus. "Monist," Vol. IX. No. 4. 50c.

Psychology and the Ego. By Prof. C. Lloyd Morgan, Bristol, England. "Monist," Vol X, No. 1. 50 cents.



Arthur Schopenhauer.
(1788-1860.)

A Decade of Philosophy in France. By Lucien Arréat, Paris. "Monist," Vol. X, No. 1. 50 cents.

On the Theory of Nerve-Activity. By Dr. Ewald Hering, Leipsic. "Monist," Vol. X, No. 2. 50 cents.

On Psychology and Metaphysics. The Philosophical Fragments of Bernhard Riemann. "Monist," Vol. X, No. 2. 50 cents.

The Sitaharanam; or, The Rape of Sita. From the Sanskrit. By Dr. A. H. Gunlogsen. "Open Court," Nos. 90, 91, 93, 94, 96, 97, 98, 99, 100. 90 cents.

The Relation of the Individual to the Community. By Prof. Wilhelm Wundt, Leipsic. "Open Court," Nos. 239, 242, 243. 15 cents.

Signs and Symbols. By Prof. Ernst Schroeder, Hamburg. "Open Court," Nos. 270, 271, 274. 15 cents.

The Psychology of Legerdemain. By Prof. Max Dessoir, Berlin. "Open Court," Nos. 291, 292, 293, 294, 295. 25 cents.

Some Definitions of Instinct. By Prof. C. Lloyd Morgan, Bristol, England. "Open Court," No. 420. 5 cents.

Pan-Egoism the Key-Note of the Universe. By Robert Lewins. "Open Court," No. 435. 5c.

Adam Smith on the Nature of Science. By T. J. McCormack. "Open Court," No. 397. 5c.

Philosophical Parties and Their Significance as Factors in the Evolution of Thought. By Dr. Paul Carus. "Open Court," Vol. XI, No. 9. 10 cents.

Philosophy, Psychology, and Language—Continued

On the Nature of Scientific Law and Scientific Explanation. By THOMAS J. MCCORMACK. "Monist," Vol. X, No. 4. 50 cents.

The Concept. By DR. ERNST MACH, Vienna. "Open Court," No. 529. 10 cents.

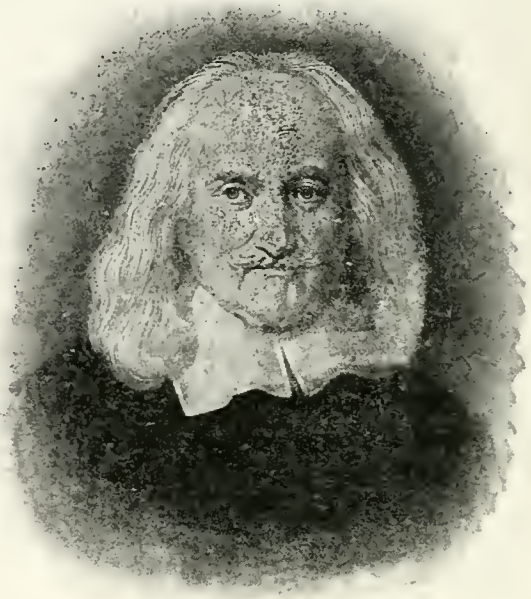
Notion of a Continuum. By DR. ERNST MACH, Vienna. "Open Court," No. 530. 10 cents.

Language. By DR. ERNST MACH, Vienna. "Open Court," No. 526. 10 cents.

The Propensity Toward the Marvellous. By DR. ERNST MACH, Vienna. "Open Court," No. 532. 10 cents.

Friedrich Max Mueller. By T. J. MCCORMACK. "Open Court," No. 535. 10c.

Names and Numbers. By DR. ERNST MACH, Vienna. "Open Court," No. 524. 10 cents.



HOBBES. (1588-1679.)

John Bernard Stallo. By T. J. MCCORMACK. "Open Court," No. 528. 10 cents.

Are We Products of Mind? By DR EDMUND MONTGOMERY. "Open Court," Nos. 16, 17, 18, 19, 21, 22. 90 cents. Number 21 short.

Persona. By PROF. F. MAX MUELLER, Oxford. "Open Court," Nos. 19, 20. 30 cents.

The Soul. By EDWARD C. HEGELER. "Open Court," No. 15. 15 cents. See also No. 127. 10 cents.

BARUCH SPINOZA. (1632-1677.)

The Animal Soul and the Human Soul. By DR. ERNST KRAUSE (Carus Sterne), Berlin. "Open Court," Nos. 37, 41, 43. O. P.

Karl Theodor Bayrhoffer and His System of "Naturalistic Monism." By EDMUND MONTGOMERY, M. D. "Open Court," Nos. 30, 32, 35, 36. O. P.

Body and Mind; or, The Data of Moral Physiology. By DR. FELIX L. OSWALD. "Open Court," Nos. 27, 29, 31, 33, 34, 36, 38, 40, 42, 44, 46, 48, 51, 54, 57, 62, 66, 69, 72, 75, 78. O. P.

Matter and Its Qualities. By EDWARD C. HEGELER. "Open Court," No. 31. 10 cents.

The Origin of Reason. By LUDWIG NOIRÉ. "Open Court," No. 33. 10 cents.

The Lutheran Church and Science. By EDWARD C. HEGELER. "Open Court," No. 106. 10 cents.

Monism and Evolution. Remarks by the REV. H. H. HIGGINS and EDWARD C. HEGELER. "Open Court," No. 101. O. P.

N. B.—The foregoing is but a very brief list of the philosophical, psychological, and linguistic articles that have appeared in "The Open Court"; but the limitations of space prevent our cataloguing them complete

The Religion of Science Library

The CHEAPEST BOOKS in Science, Philosophy, and Psychology Now Publishing in America. High Grade Paper. Large Print. Thread-sewed. These books are not reprints of obsolete works, but REPRODUCTIONS OF STANDARD TREATISES IN ALL DEPARTMENTS; Scientific and Philosophical Classics, etc. Postage extra—15c. books, 4c.; 25c. books, 6c.; 50c. books, 10c

No. 1. **The Religion of Science.** By Paul Carus. 25 cents. 1s. 6d.
2. **Three Introductory Lectures on the Science of Thought.** By F. Max Mueller. 25c. 1s. 6d.
3. **Three Lectures on the Science of Language.** By F. Max Mueller. 25 cents. 1s. 6d.
4. **The Diseases of Personality.** By Th. Ribot. 25 cents. 1s. 6d.
5. **The Psychology of Attention.** By Th. Ribot. 25 cents. 1s. 6d.
6. **The Psychic Life of Micro-Organisms.** By Alfred Binet. 25 cents. 1s. 6d.
7. **The Nature of the State.** By Paul Carus. 15 cents. 9d.
8. **On Double Consciousness.** By Alfred Binet. 15 cents. 9d.
9. **Fundamental Problems.** By Paul Carus. Pages, 373. 50 cents. 2s. 6d.
10. **The Diseases of the Will.** By Th. Ribot. 25 cents. 1s. 6d.
11. **The Origin of Language, and The Logos Theory.** By Ludwig Noiré. 15 cents. 9d.
12. **The Free Trade Struggle in England.** By Gen. M. M. Trumbull. 25 cents. 1s. 6d.
13. **Wheelbarrow on the Labor Question.** By Gen. M. M Trumbull. 35 cents. 2s.
14. **The Gospel of Buddha.** By Paul Carus. 35 cents. 2s.
15. **Primer of Philosophy.** By Paul Carus. 25 cents. 1s. 6d.
16. **On Memory, and The Specific Energies of the Nervous System.** By Prof. Ewald Hering. 15 cents. 9d.
17. **The Redemption of the Brahman.** A Novel. By R. Garbe. 25 cents. 1s. 6d.
18. **An Examination of Weismannism.** By G. J. Romanes. 35 cents.
19. **On Germinal Selection.** By August Weismann. 25 cents. 1s. 6d.
20. **Lovers Three Thousand Years Ago.** By T. A. Goodwin. Out of Print.
21. **Popular Scientific Lectures.** By Ernst Mach. 50 cents. 2s. 6d.
22. **Ancient India: Its Language and Religions.** By H. Oldenberg. 25 cents. 1s. 6d.
23. **The Prophets of Israel.** By C. H. Cornill. 25 cents. 1s. 6d.
24. **Homilies of Science.** By Paul Carus. 35 cents. 2s. (Out of print. For cloth edition, see page 28.)
25. **Thoughts on Religion.** By G. J. Romanes. 50 cents. 2s. 6d.
26. **Philosophy of Ancient India.** By Richard Garbe. 25 cents. 1s. 6d.
27. **Martin Luther.** By Gustav Freytag. 25 cents. 1s. 6d.
28. **English Secularism.** By George Jacob Holyoake. 25 cents. 1s. 6d.
29. **On Orthogenesis.** By Th. Eimer. 25 cents. 1s. 6d.
30. **Chinese Philosophy.** By Paul Carus. 25 cents. 1s. 6d.
31. **The Lost Manuscript.** By Gustav Freytag. 60 cents. 3s.
32. **A Mechanico-Physiological Theory of Organic Evolution.** By Carl von Naegeli. 15 cents. 9d.
33. **Chinese Fiction.** By the Rev. George T. Candlin. 15 cents. 9d.
34. **Mathematical Essays and Recreations.** By H. Schubert. 25 cents. 1s. 6d.
35. **The Ethical Problem.** By Paul Carus. 50 cents. 2s. 6d.
36. **Buddhism and Its Christian Critics.** By Paul Carus. 50 cents. 2s. 6d.
37. **Psychology for Beginners.** By H. M. Stanley. 20 cents. 1s.
38. **Discourse on Method.** By René Descartes. 25 cents. 1s. 6d.
39. **The Dawn of a New Religious Era.** By Paul Carus. 15 cents. 9d.
40. **Kant and Spencer.** By Paul Carus. 20 cents. 1s.
41. **The Soul of Man.** By Paul Carus. 75 cents. 3s. 6d.
42. **World's Congress Addresses.** By C. C. Bonney. 15 cents. 9d.
43. **The Gospel According to Darwin.** By Woods Hutchinson. 50 cents. 2s. 6d.
44. **Whence and Whither.** By Paul Carus. 25 cents. 1s. 6d.
45. **Enquiry Concerning Human Understanding.** By David Hume. 25 cents. 1s. 6d.
46. **Enquiry Concerning the Principles of Morals.** By David Hume. 25 cents. 1s. 6d.
47. **The Psychology of Reasoning.** By Alfred Binet. 25 cents. 1s. 6d.
48. **Treatise Concerning the Principles of Human Knowledge.** By George Berkeley. 25c. 1s. 6d.
49. **Three Dialogues Between Hylas and Philonous.** By George Berkeley. 25 cents. 1s. 6d.
50. **Public Worship: A Study in the Psychology of Religion.** By John P. Hylan. 25 cents. 1s. 6d.
51. **Descartes' Meditations, with selections from the Principles.** 35 cents. 2s.
52. **Leibniz's Metaphysics, Correspondence, Monadology.** 50 cents. 2s. 6d.
53. **Kant's Prolegomena.** 50 cents. 2s. 6d.

PHILOSOPHICAL AND PSYCHOLOGICAL PORTRAIT SERIES

Suitable for framing and hanging in public and private libraries, laboratories, seminaries, recitation and lecture rooms

The portraits, which are 11 x 14 in., have been taken from the best sources, and are high-grade photogravures. The series is now complete.

PHILOSOPHICAL

PYTHAGORAS
SOCRATES
PLATO
ARISTOTLE
EPICTETUS
THOMAS AQUINAS
ST. AUGUSTINE
AVERRHOES
DUNS SCOTUS
GIORDANO BRUNO
BACON
HOBBES
DESCARTES
MALEBRANCHE
SCHELLING
SPINOZA
LOCKE
BERKELEY
HUME
MONTESQUIEU
VOLTAIRE
D'ALEMBERT
CONDILLAC
DIDEROT
ROUSSEAU
LEIBNITZ
WOLFF
KANT
FICHTE
HEGEL
SCHLEIERMACHER
SCHOPENHAUER
HERBART
FEUERBACH
LOTZE
REID
DUGALD STEWART
SIR W. HAMILTON
COUSIN
COMTE
ROSMINI
J. STUART MILL
HERBERT SPENCER

PSYCHOLOGICAL

CABANIS
MAINE DE BIRAN
BENEKE
E. H. WEBER
FECHNER
HELMHOLTZ
WUNDT
HERING
AUBERT
MACH
STUMPF
EXNER
STEINTHAL
BAIN
SULLY
WARD
C. L. MORGAN
ROMANES
PAUL JANET
RIBOT
TAINE
FOUILLÉE
BINET
G. STANLEY HALL
G. T. LADD

VICTOR COUSIN. (1792-1867.)
From the Philosophical Portrait Series (reduced).

To Subscribers:

TERMS: For the whole series (68 portraits) on regular paper, $7.50 (35s.); on heavy Imperial Japanese paper $11 (50s.)

The Philosophical Series, 43 portraits, Imperial Japanese paper, $8.75 (40s.); the same on the best plate paper, $6.25 (30s.). The Psychological Series, 25 portraits, on Imperial Japanese paper, $5.00 (24s.); the same on the best plate paper, $3.75 (18s.). (The higher prices in parentheses refer to foreign countries Carriage prepaid.) Single portraits on regular paper, 25 cents.

For subscribers who may prefer not to frame the portraits, a neat portfolio will be provided at a cost of $1.00 additional.

"I have received the first installment of the series of portraits of philosophers, and am very much pleased with them." —Prof. David G. Ritchie, St. Andrews, Scotland.

"I congratulate you on the magnificent character of the portraits, and I feel proud to have such adornments for my lecture room."—J. J. McNulty, Professor of Philosophy in the College of the City of New York.

SCHOPENHAUER BUSTS

The Open Court Publishing Co. has procured from Elisabet Ney, the famous sculptress, the original model of her well-known bust of Schopenhauer, made in 1859, a year before the death of the great philosopher.

A limited number of life-size plaster reproductions of this model have been made and are offered for sale at $15.00 each. Transportation is extra, but the weight of the bust, packed and ready for shipment, will not exceed fifty pounds. (Photographs on application.)

Attractive Combined Offers

Asiatic Russia (postpaid) - - -	$7.95
Records of the Past - - - -	2.00
The Open Court - - - -	1.00
Bibliotheca Sacra - - - -	3.00
	$13.95

All four for $10.75.

Asiatic Russia (postpaid) - - -	$7.95
The Open Court - - - -	1.00
Bibliotheca Sacra - - - -	3.00
	$11.95

All three for $9.75.

Records of the Past - - -	$2.00
The Open Court - - - -	1.00
Bibliotheca Sacra - - - -	3.00
	$6.00

All three for $4.75.

Asiatic Russia.—"A work of highest authority, presented with literary grace and skill. . . . The result of prodigious scholarship and wide observation presented in easy, readable style."—*The Critic.*

Records of the Past.—A new monthly periodical published at Washington, D. C., under the editorship of Rev. Henry Mason Baum, D. C. L., with Mr. Frederick Wright as assistant. Each number contains thirty-two quarto pages, accompanied with numerous elegant illustrations.

Remittances, strictly in advance, may be made by Money Order, New York Draft, or Registered Letter to

Bibliotheca Sacra Co., Oberlin, Ohio, U. S. A.